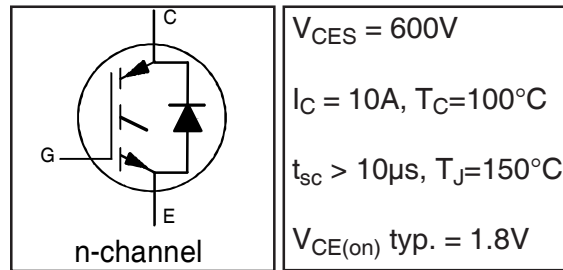


INSULATED GATE BIPOLAR TRANSISTOR WITH  
ULTRAFAST SOFT RECOVERY DIODE

IRGB6B60KDPbF  
IRGS6B60KDPbF  
IRGSL6B60KDPbF

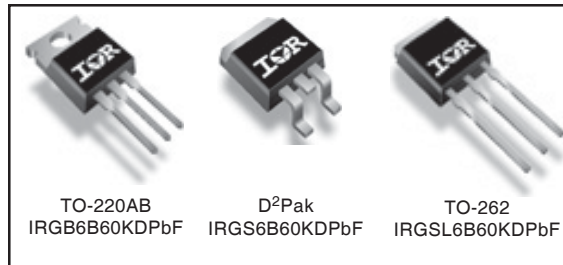
**Features**

- Low VCE (on) Non Punch Through IGBT Technology.
- Low Diode VF.
- 10µs Short Circuit Capability.
- Square RBSOA.
- Ultrasoft Diode Reverse Recovery Characteristics.
- Positive VCE (on) Temperature Coefficient.
- Lead-Free



**Benefits**

- Benchmark Efficiency for Motor Control.
- Rugged Transient Performance.
- Low EMI.
- Excellent Current Sharing in Parallel Operation.



**Absolute Maximum Ratings**

	Parameter	Max.	Units
$V_{CES}$	Collector-to-Emitter Voltage	600	V
$I_C @ T_C = 25^\circ C$	Continuous Collector Current	18	A
$I_C @ T_C = 100^\circ C$	Continuous Collector Current	10	
$I_{CM}$	Pulsed Collector Current	26	
$I_{LM}$	Clamped Inductive Load Current <sup>①</sup>	26	
$I_F @ T_C = 25^\circ C$	Diode Continuous Forward Current	18	
$I_F @ T_C = 100^\circ C$	Diode Continuous Forward Current	10	V
$I_{FM}$	Diode Maximum Forward Current	26	
$V_{GE}$	Gate-to-Emitter Voltage	± 20	
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	90	W
$P_D @ T_C = 100^\circ C$	Maximum Power Dissipation	36	
$T_J$	Operating Junction and	-55 to +150	°C
$T_{STG}$	Storage Temperature Range		
	Soldering Temperature, for 10 sec.	300 (0.063 in. (1.6mm) from case)	

**Thermal Resistance**

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case - IGBT	—	—	1.4	°C/W
$R_{\theta JC}$	Junction-to-Case - Diode	—	—	4.4	
$R_{\theta CS}$	Case-to-Sink, flat, greased surface	—	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient, typical socket mount <sup>①</sup>	—	—	62	
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount, steady state) <sup>②</sup>	—	—	40	
Wt	Weight	—	1.44	—	g

# IRGB/S/SL6B60KDPbF

International  
**IR** Rectifier

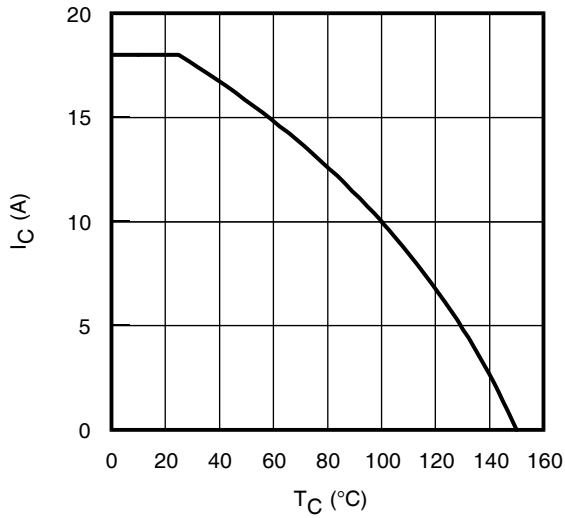
## Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions	Ref.Fig.
V <sub>(BR)CES</sub>	Collector-to-Emitter Breakdown Voltage	600	—	—	V	V <sub>GE</sub> = 0V, I <sub>C</sub> = 500μA	
ΔV <sub>(BR)CES</sub> /ΔT <sub>J</sub>	Temperature Coeff. of Breakdown Voltage	—	0.3	—	V/°C	V <sub>GE</sub> = 0V, I <sub>C</sub> = 1.0mA, (25°C-150°C)	
V <sub>CE(on)</sub>	Collector-to-Emitter Saturation Voltage	1.5	1.80	2.20	V	I <sub>C</sub> = 5.0A, V <sub>GE</sub> = 15V	5, 6, 7
		—	2.20	2.50		I <sub>C</sub> = 5.0A, V <sub>GE</sub> = 15V, T <sub>J</sub> = 150°C	9,10,11
V <sub>GE(th)</sub>	Gate Threshold Voltage	3.5	4.5	5.5	V	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 250μA	9,10,11
ΔV <sub>GE(th)</sub> /ΔT <sub>J</sub>	Temperature Coeff. of Threshold Voltage	—	-10	—	mV/°C	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 1.0mA, (25°C-150°C)	12
g <sub>fe</sub>	Forward Transconductance	—	3.0	—	S	V <sub>CE</sub> = 50V, I <sub>C</sub> = 5.0A, PW=80μs	
I <sub>CES</sub>	Zero Gate Voltage Collector Current	—	1.0	150	μA	V <sub>GE</sub> = 0V, V <sub>CE</sub> = 600V	
		—	200	500		V <sub>GE</sub> = 0V, V <sub>CE</sub> = 600V, T <sub>J</sub> = 150°C	
V <sub>FM</sub>	Diode Forward Voltage Drop	—	1.25	1.45	V	I <sub>C</sub> = 5.0A	8
		—	1.20	1.40		I <sub>C</sub> = 5.0A, T <sub>J</sub> = 150°C	
I <sub>GES</sub>	Gate-to-Emitter Leakage Current	—	—	±100	nA	V <sub>GE</sub> = ±20V	

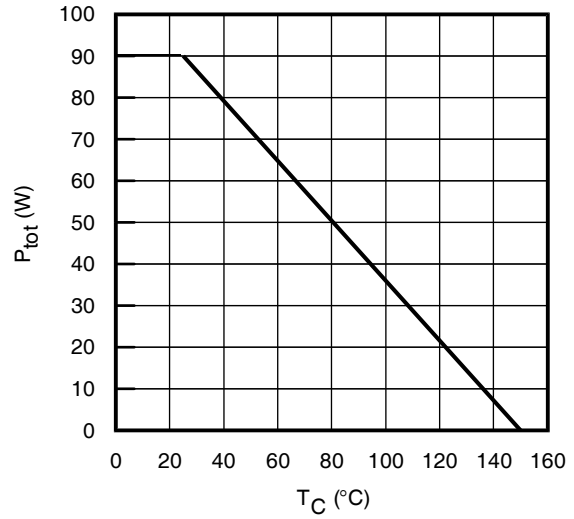
## Switching Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions	Ref.Fig.
Q <sub>g</sub>	Total Gate Charge (turn-on)	—	18.2	—	nC	I <sub>C</sub> = 5.0A	CT1
Q <sub>ge</sub>	Gate - Emitter Charge (turn-on)	—	1.9	—		V <sub>CC</sub> = 400V	
Q <sub>gc</sub>	Gate - Collector Charge (turn-on)	—	9.2	—		V <sub>GE</sub> = 15V	
E <sub>on</sub>	Turn-On Switching Loss	—	110	210	μJ	I <sub>C</sub> = 5.0A, V <sub>CC</sub> = 400V	CT4
E <sub>off</sub>	Turn-Off Switching Loss	—	135	245		V <sub>GE</sub> = 15V, R <sub>G</sub> = 100Ω, L = 1.4mH	
E <sub>tot</sub>	Total Switching Loss	—	245	455		L <sub>s</sub> = 150nH, T <sub>J</sub> = 25°C ③	
t <sub>d(on)</sub>	Turn-On Delay Time	—	25	34	ns	I <sub>C</sub> = 5.0A, V <sub>CC</sub> = 400V	CT4
t <sub>r</sub>	Rise Time	—	17	26		V <sub>GE</sub> = 15V, R <sub>G</sub> = 100Ω, L = 1.4mH	
t <sub>d(off)</sub>	Turn-Off Delay Time	—	215	230		L <sub>s</sub> = 150nH, T <sub>J</sub> = 25°C	
t <sub>f</sub>	Fall Time	—	13.2	22			
E <sub>on</sub>	Turn-On Switching Loss	—	150	260	μJ	I <sub>C</sub> = 5.0A, V <sub>CC</sub> = 400V	CT4 13,15
E <sub>off</sub>	Turn-Off Switching Loss	—	190	300		V <sub>GE</sub> = 15V, R <sub>G</sub> = 100Ω, L = 1.4mH	
E <sub>tot</sub>	Total Switching Loss	—	340	560		L <sub>s</sub> = 150nH, T <sub>J</sub> = 150°C ③	
t <sub>d(on)</sub>	Turn-On Delay Time	—	28	37	ns	I <sub>C</sub> = 5.0A, V <sub>CC</sub> = 400V	14, 16 CT4 WF1 WF2
t <sub>r</sub>	Rise Time	—	17	26		V <sub>GE</sub> = 15V, R <sub>G</sub> = 100Ω, L = 1.4mH	
t <sub>d(off)</sub>	Turn-Off Delay Time	—	240	255		L <sub>s</sub> = 150nH, T <sub>J</sub> = 150°C	
t <sub>f</sub>	Fall Time	—	18	27			
C <sub>ies</sub>	Input Capacitance	—	290	—	pF	V <sub>GE</sub> = 0V	
C <sub>oes</sub>	Output Capacitance	—	34	—		V <sub>CC</sub> = 30V	
C <sub>res</sub>	Reverse Transfer Capacitance	—	10	—		f = 1.0MHz	
RBSOA	Reverse Bias Safe Operating Area	FULL SQUARE				T <sub>J</sub> = 150°C, I <sub>C</sub> = 26A, V <sub>p</sub> = 600V V <sub>CC</sub> = 500V, V <sub>GE</sub> = +15V to 0V, R <sub>G</sub> = 100Ω	4 CT2
SCSOA	Short Circuit Safe Operating Area	10	—	—	μs	T <sub>J</sub> = 150°C, V <sub>p</sub> = 600V, R <sub>G</sub> = 100Ω V <sub>CC</sub> = 360V, V <sub>GE</sub> = +15V to 0V	CT3 WF4
E <sub>rec</sub>	Reverse Recovery energy of the diode	—	90	175	μJ	T <sub>J</sub> = 150°C	17,18,19
t <sub>rr</sub>	Diode Reverse Recovery time	—	70	80	ns	V <sub>CC</sub> = 400V, I <sub>F</sub> = 5.0A, L = 1.4mH	20, 21
I <sub>rr</sub>	Diode Peak Reverse Recovery Current	—	10	14	A	V <sub>GE</sub> = 15V, R <sub>G</sub> = 100Ω, L <sub>s</sub> = 150nH	CT4, WF3

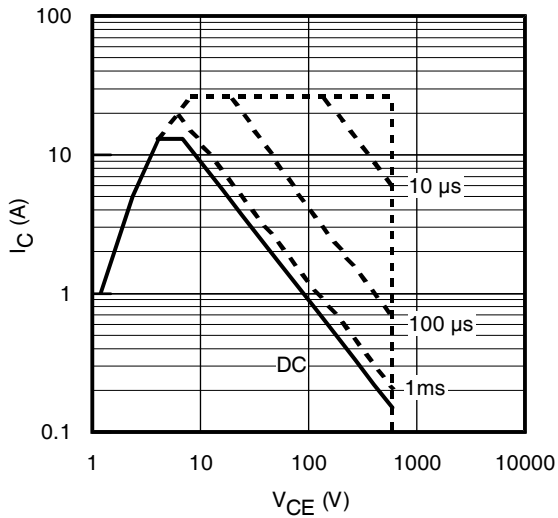
Note: ① to ④ are on page 15



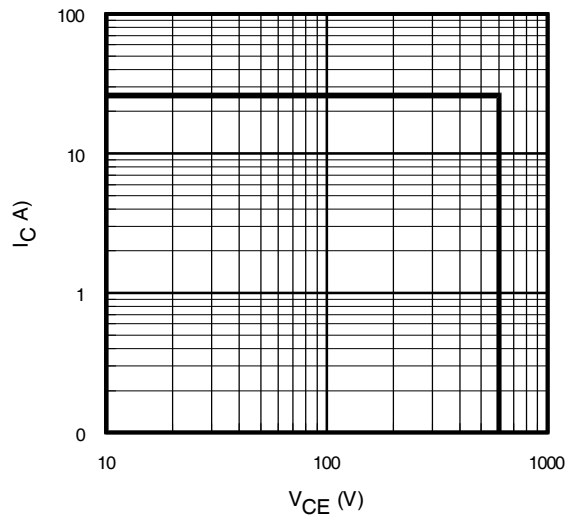
**Fig. 1** - Maximum DC Collector Current vs. Case Temperature



**Fig. 2** - Power Dissipation vs. Case Temperature

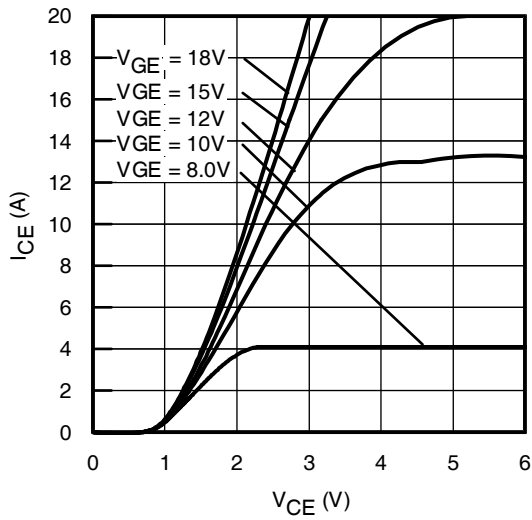


**Fig. 3** - Forward SOA  
 $T_C = 25^{\circ}C$ ;  $T_J \leq 150^{\circ}C$

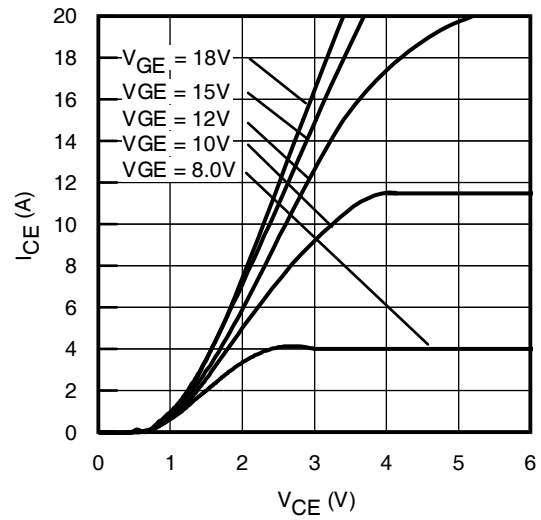


**Fig. 4** - Reverse Bias SOA  
 $T_J = 150^{\circ}C$ ;  $V_{GE} = 15V$

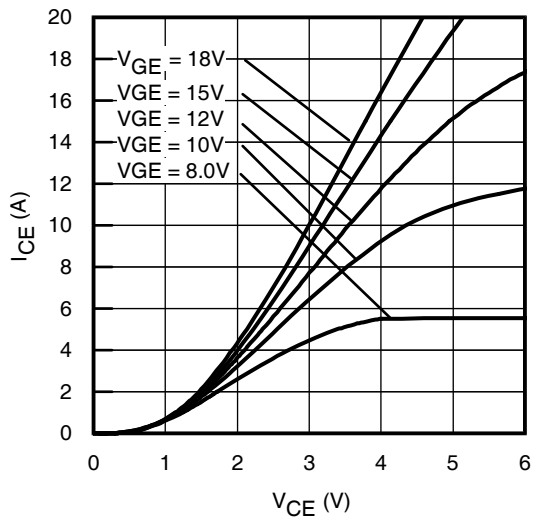
# IRGB/S/SL6B60KDPbF



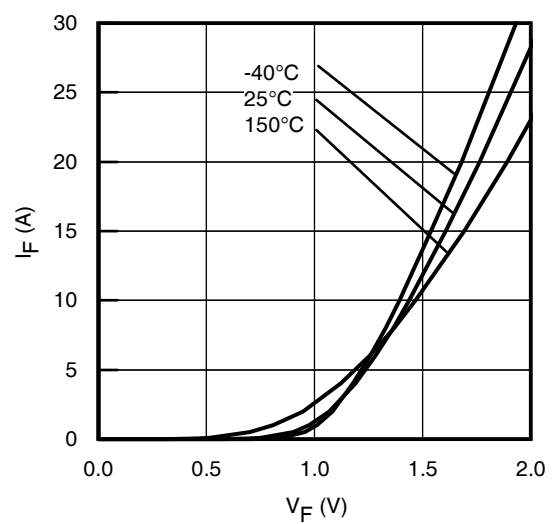
**Fig. 5** - Typ. IGBT Output Characteristics  
 $T_J = -40^\circ\text{C}$ ;  $t_p = 80\mu\text{s}$



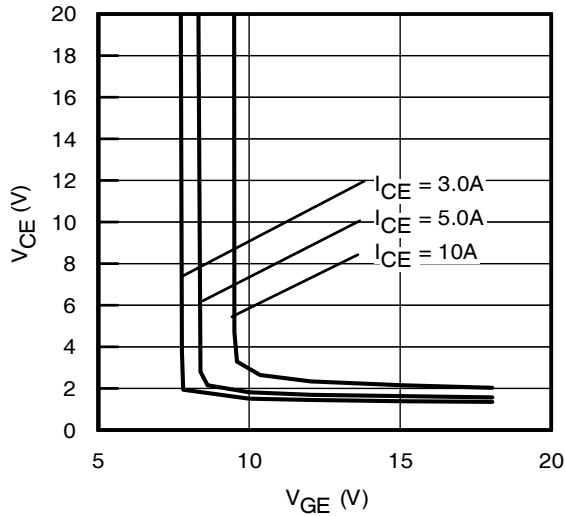
**Fig. 6** - Typ. IGBT Output Characteristics  
 $T_J = 25^\circ\text{C}$ ;  $t_p = 80\mu\text{s}$



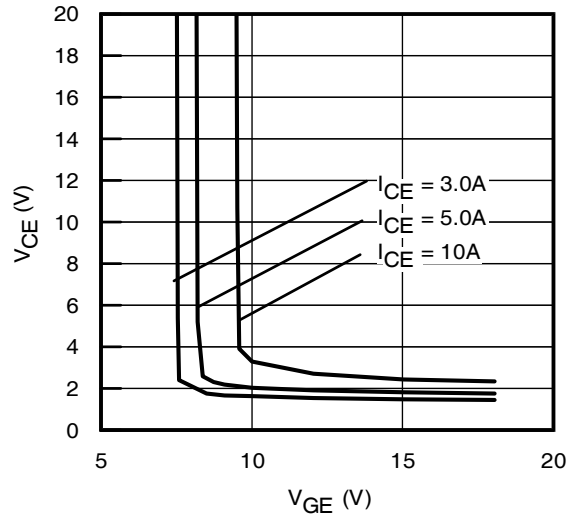
**Fig. 7** - Typ. IGBT Output Characteristics  
 $T_J = 150^\circ\text{C}$ ;  $t_p = 80\mu\text{s}$



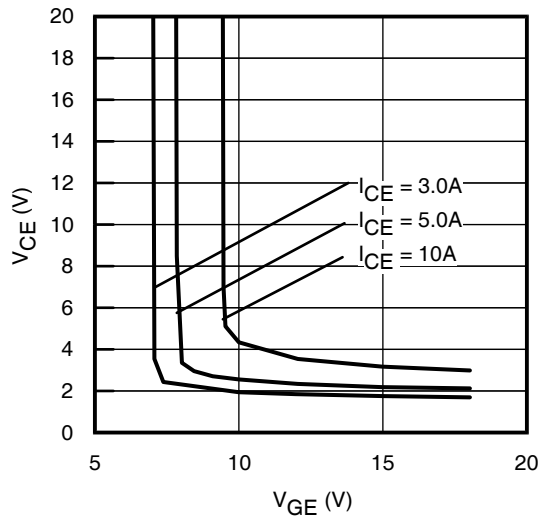
**Fig. 8** - Typ. Diode Forward Characteristics  
 $t_p = 80\mu\text{s}$



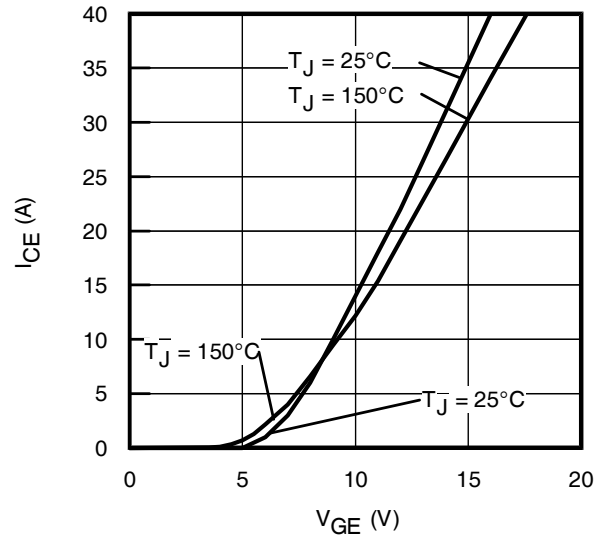
**Fig. 9** - Typical  $V_{CE}$  vs.  $V_{GE}$   
 $T_J = -40^\circ\text{C}$



**Fig. 10** - Typical  $V_{CE}$  vs.  $V_{GE}$   
 $T_J = 25^\circ\text{C}$

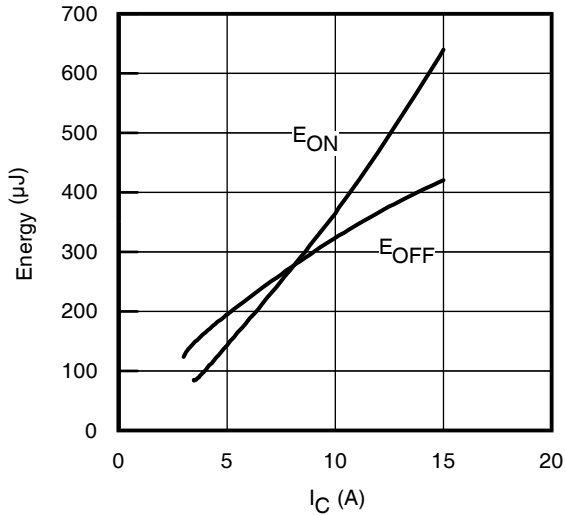


**Fig. 11** - Typical  $V_{CE}$  vs.  $V_{GE}$   
 $T_J = 150^\circ\text{C}$

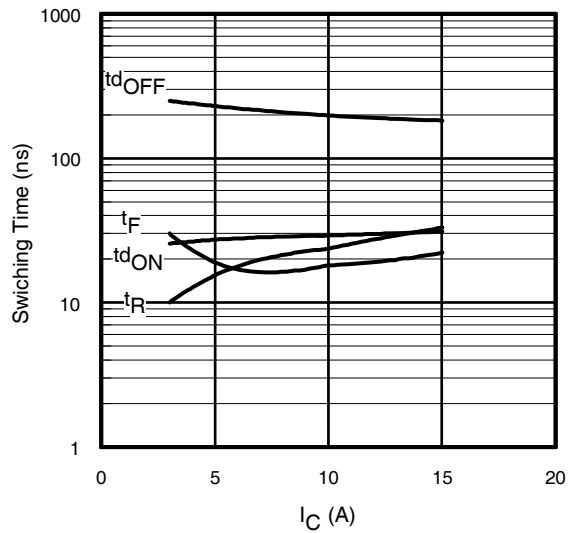


**Fig. 12** - Typ. Transfer Characteristics  
 $V_{CE} = 50\text{V}$ ;  $t_p = 10\mu\text{s}$

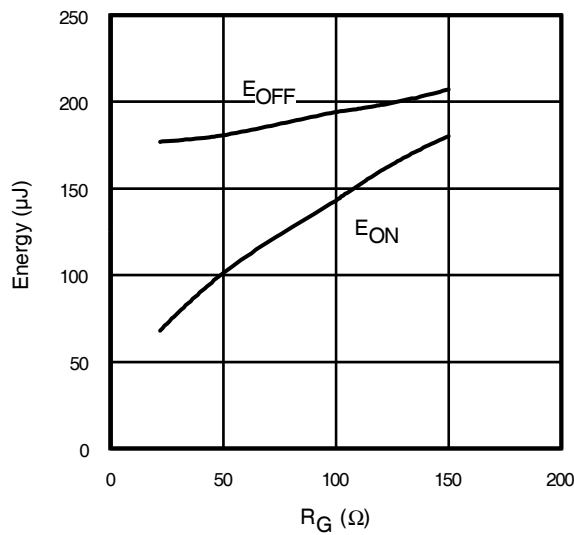
# IRGB/S/SL6B60KDPbF



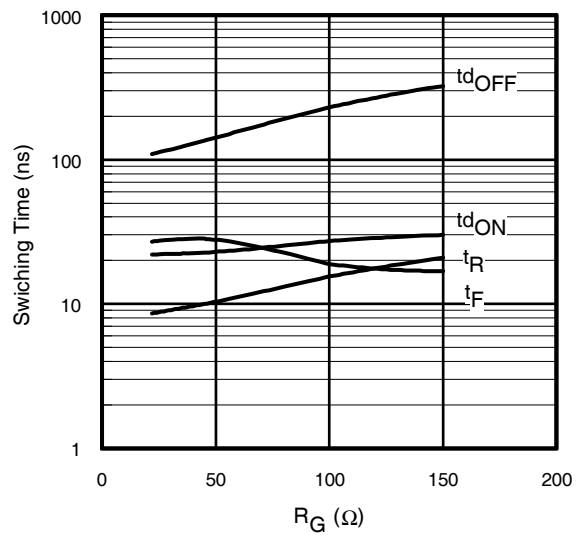
**Fig. 13** - Typ. Energy Loss vs.  $I_C$   
 $T_J = 150^\circ\text{C}$ ;  $L = 1.4\text{mH}$ ;  $V_{CE} = 400\text{V}$   
 $R_G = 100\Omega$ ;  $V_{GE} = 15\text{V}$



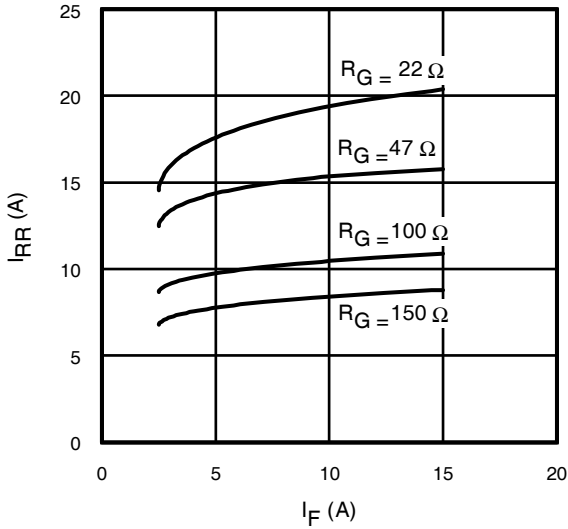
**Fig. 14** - Typ. Switching Time vs.  $I_C$   
 $T_J = 150^\circ\text{C}$ ;  $L = 1.4\text{mH}$ ;  $V_{CE} = 400\text{V}$   
 $R_G = 100\Omega$ ;  $V_{GE} = 15\text{V}$



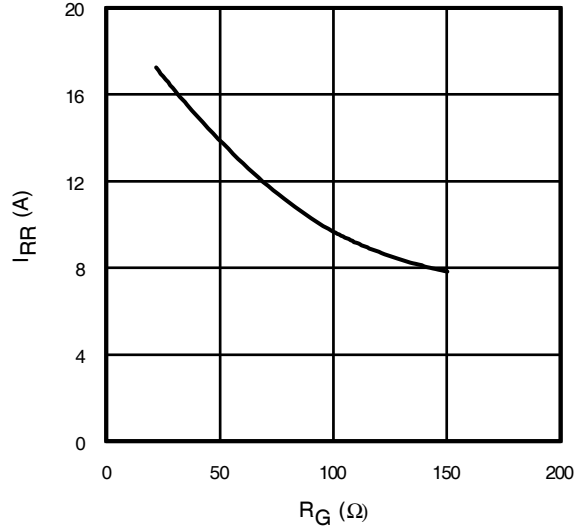
**Fig. 15** - Typ. Energy Loss vs.  $R_G$   
 $T_J = 150^\circ\text{C}$ ;  $L = 1.4\text{mH}$ ;  $V_{CE} = 400\text{V}$   
 $I_{CE} = 5.0\text{A}$ ;  $V_{GE} = 15\text{V}$



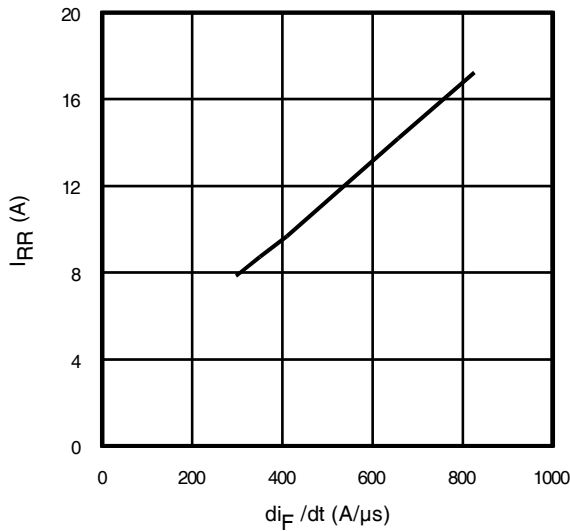
**Fig. 16** - Typ. Switching Time vs.  $R_G$   
 $T_J = 150^\circ\text{C}$ ;  $L = 1.4\text{mH}$ ;  $V_{CE} = 400\text{V}$   
 $I_{CE} = 5.0\text{A}$ ;  $V_{GE} = 15\text{V}$



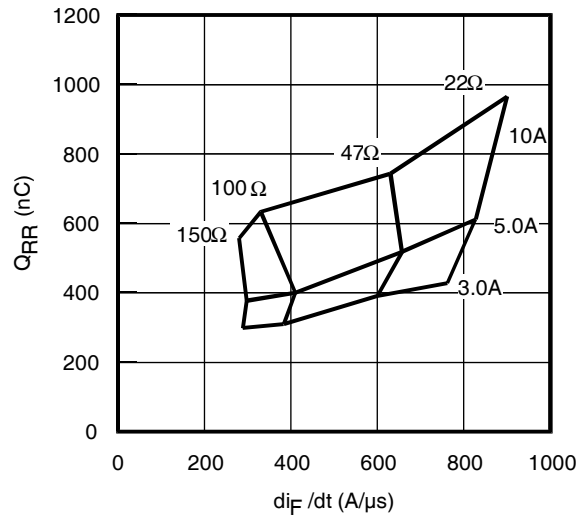
**Fig. 17** - Typical Diode  $I_{RR}$  vs.  $I_F$   
 $T_J = 150^\circ\text{C}$



**Fig. 18** - Typical Diode  $I_{RR}$  vs.  $R_G$   
 $T_J = 150^\circ\text{C}; I_F = 5.0\text{A}$

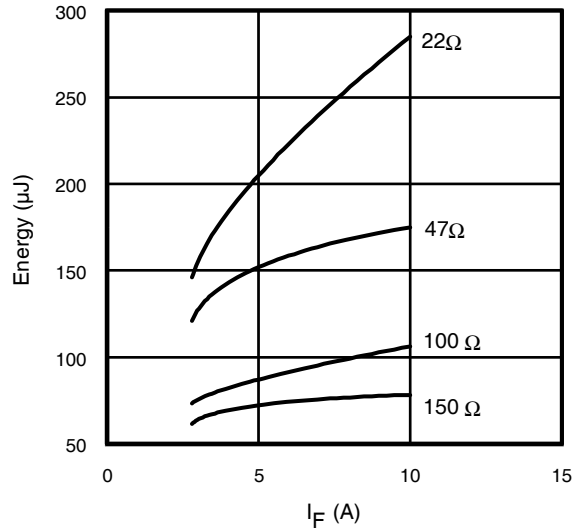


**Fig. 19**- Typical Diode  $I_{RR}$  vs.  $di_F/dt$   
 $V_{CC} = 400\text{V}; V_{GE} = 15\text{V};$   
 $I_{CE} = 5.0\text{A}; T_J = 150^\circ\text{C}$

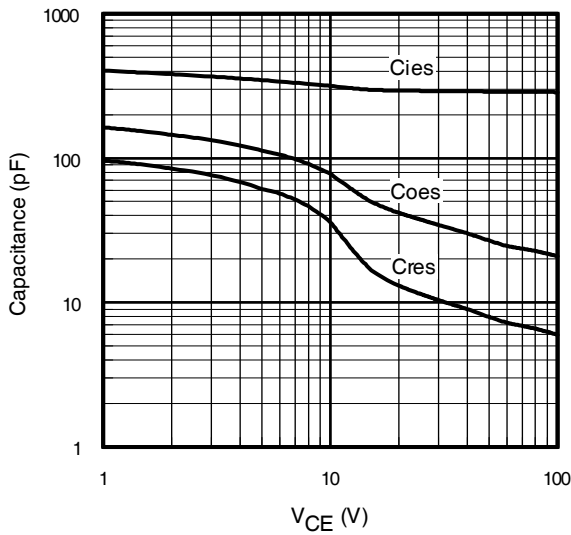


**Fig. 20** - Typical Diode  $Q_{RR}$   
 $V_{CC} = 400\text{V}; V_{GE} = 15\text{V}; T_J = 150^\circ\text{C}$

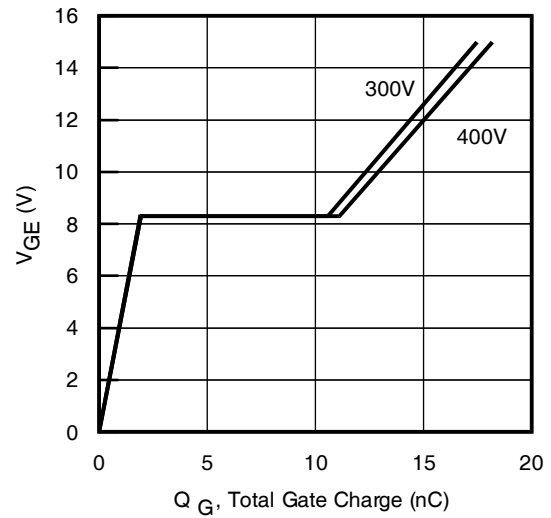
# IRGB/S/SL6B60KDPbF



**Fig. 21** - Typical Diode  $E_{RR}$  vs.  $I_F$   
 $T_J = 150^\circ\text{C}$



**Fig. 22**- Typ. Capacitance vs.  $V_{CE}$   
 $V_{GE} = 0\text{V}$ ;  $f = 1\text{MHz}$



**Fig. 23** - Typical Gate Charge vs.  $V_{GE}$   
 $I_{CE} = 5.0\text{A}$ ;  $L = 600\mu\text{H}$



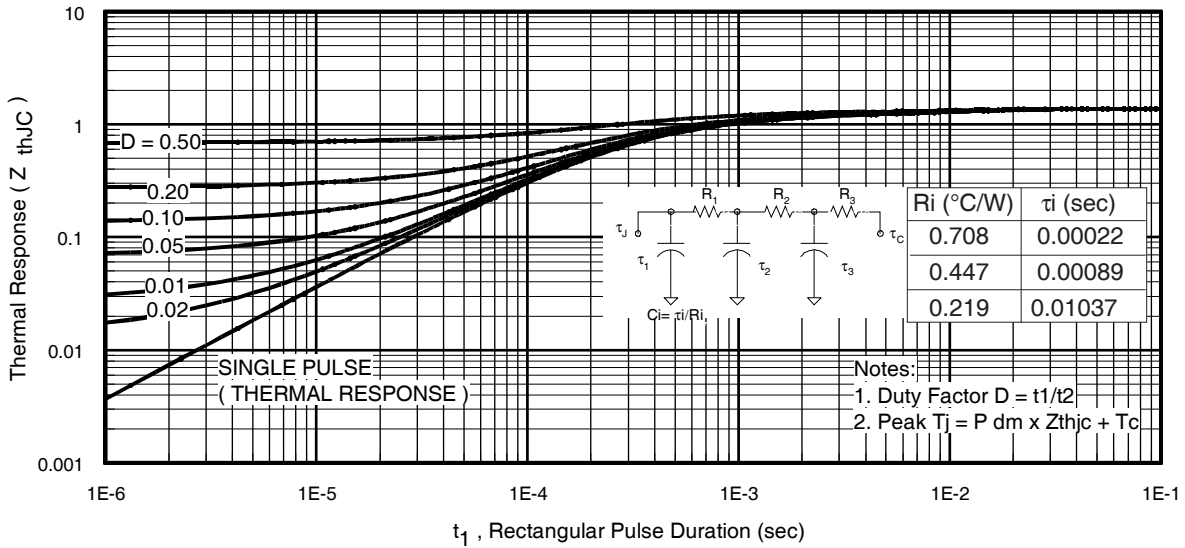


Fig 24. Maximum Transient Thermal Impedance, Junction-to-Case (IGBT)

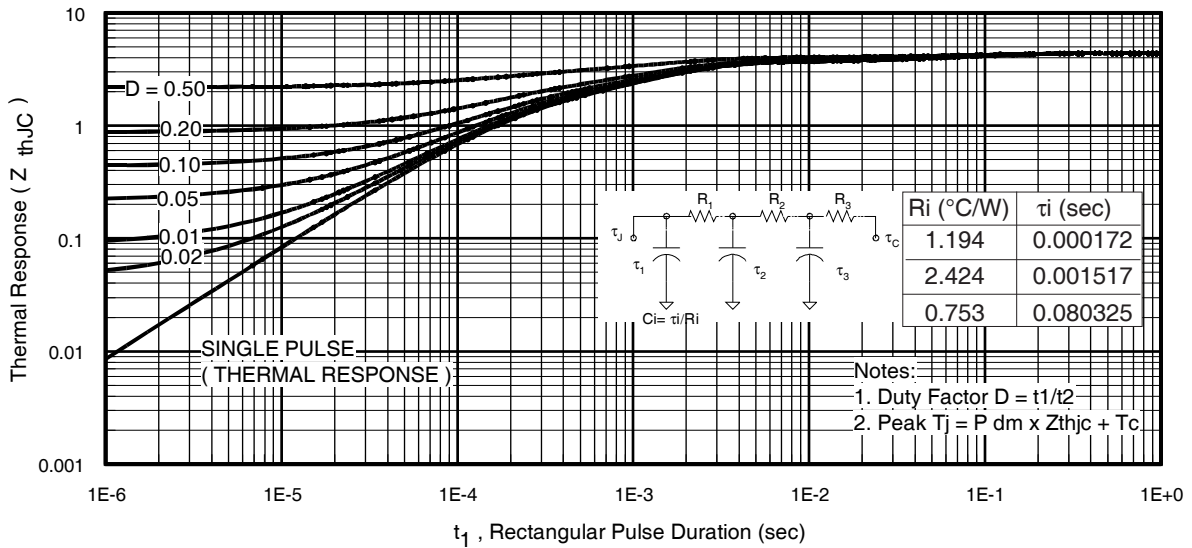
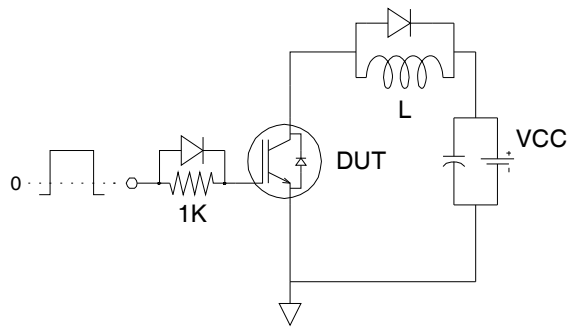


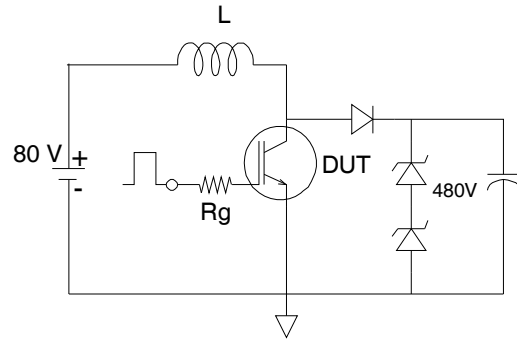
Fig 25. Maximum Transient Thermal Impedance, Junction-to-Case (DIODE)

# IRGB/S/SL6B60KDPbF

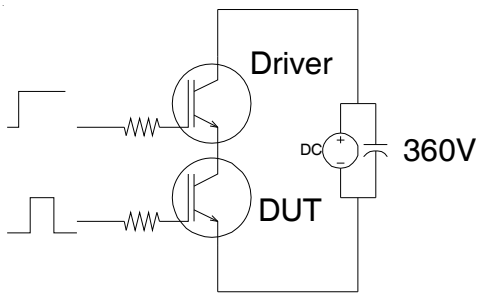
International  
**IR** Rectifier



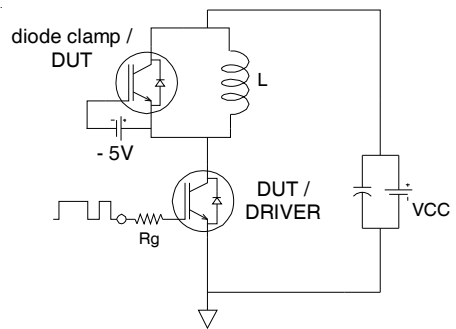
**Fig.C.T.1** - Gate Charge Circuit (turn-off)



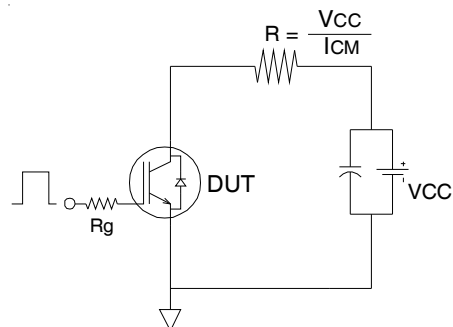
**Fig.C.T.2** - RBSOA Circuit



**Fig.C.T.3** - S.C.SOA Circuit



**Fig.C.T.4** - Switching Loss Circuit



**Fig.C.T.5** - Resistive Load Circuit

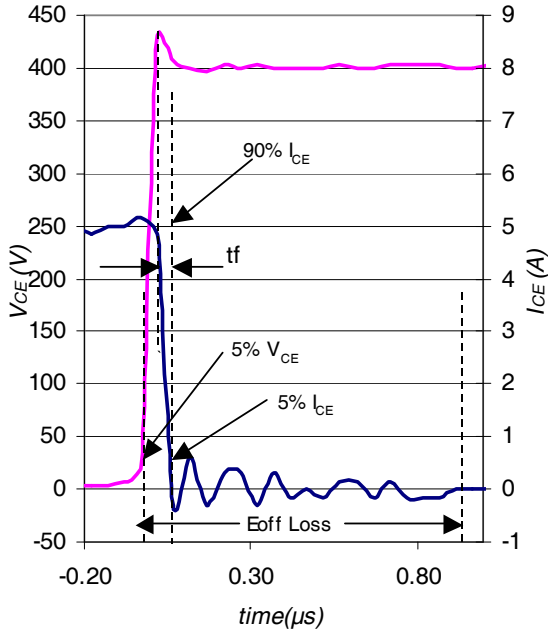


Fig. WF1- Typ. Turn-off Loss Waveform  
@  $T_J = 150^\circ\text{C}$  using Fig. CT.4

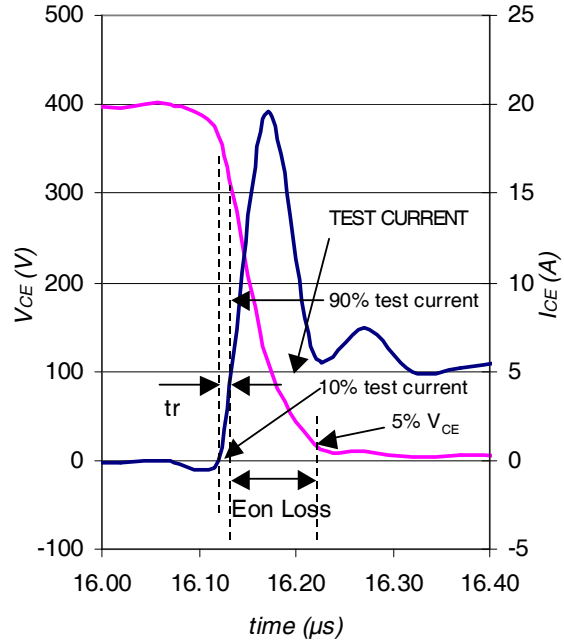


Fig. WF2- Typ. Turn-on Loss Waveform  
@  $T_J = 150^\circ\text{C}$  using Fig. CT.4

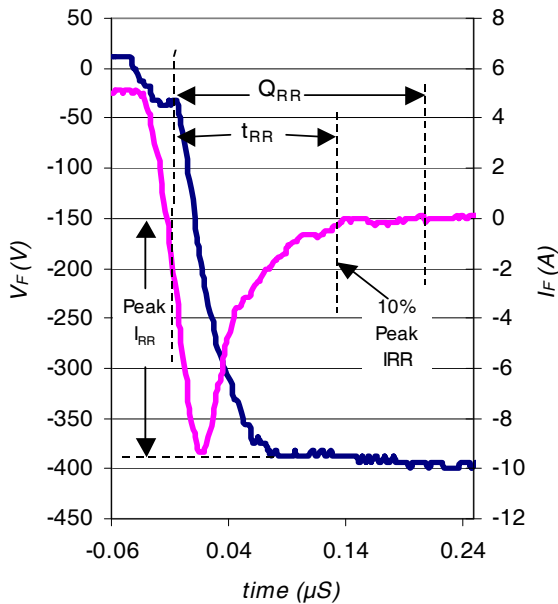


Fig. WF3- Typ. Diode Recovery Waveform  
@  $T_J = 150^\circ\text{C}$  using Fig. CT.4

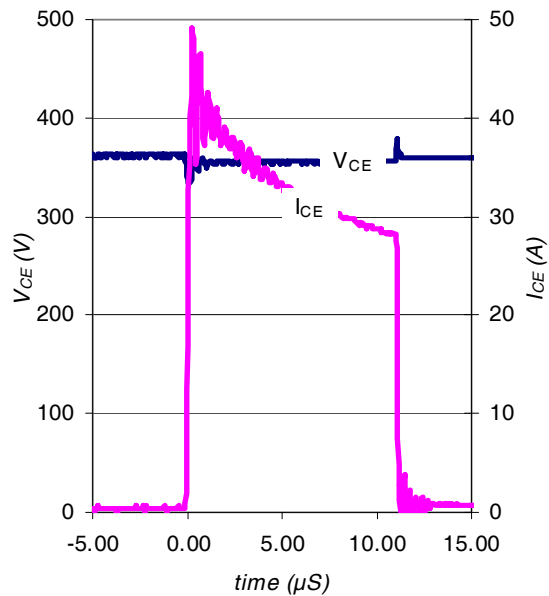


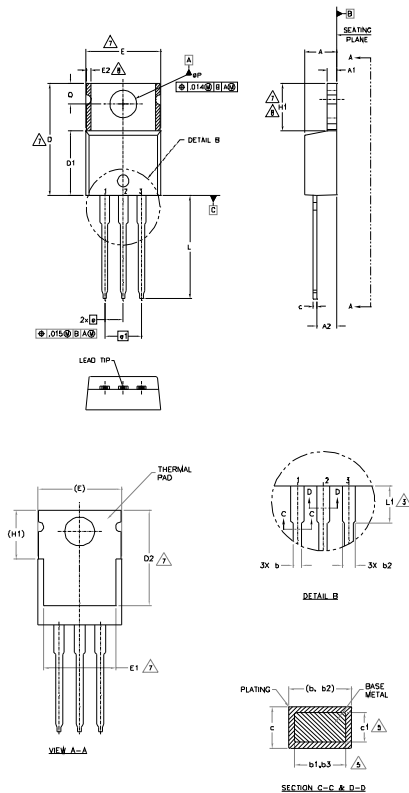
Fig. WF4- Typ. S.C Waveform  
@  $T_J = 150^\circ\text{C}$  using Fig. CT.3

# IRGB/S/SL6B60KDPbF



## TO-220AB Package Outline

Dimensions are shown in millimeters (inches)



### NOTES:

- 1.- DIMENSIONING AND TOLERANCING AS PER ASME Y14.5 M- 1994.
- 2.- DIMENSIONS ARE SHOWN IN INCHES [MILLIMETERS].
- 3.- LEAD DIMENSION AND FINISH UNCONTROLLED IN L1.
- 4.- DIMENSION D, D1 & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005" (0.127) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
- 5.- DIMENSION b1, b3 & c1 APPLY TO BASE METAL ONLY.
- 6.- CONTROLLING DIMENSION : INCHES.
- 7.- THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS E,H1,D2 & E1
- 8.- DIMENSION E2 X H1 DEFINE A ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES ARE ALLOWED.
- 9.- OUTLINE CONFORMS TO JEDEC TO-220, EXCEPT A2 (max.) AND D2 (min.) WHERE DIMENSIONS ARE DERIVED FROM THE ACTUAL PACKAGE OUTLINE.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	3.56	4.83	.140	.190	
A1	0.51	1.40	.020	.055	
A2	2.03	2.92	.080	.115	
b	0.38	1.01	.015	.040	
b1	0.38	0.97	.015	.038	5
b2	1.14	1.78	.045	.070	
b3	1.14	1.73	.045	.068	5
c	0.36	0.61	.014	.024	
c1	0.36	0.56	.014	.022	5
D	14.22	16.51	.560	.650	4
D1	8.38	9.02	.330	.355	
D2	11.68	12.88	.460	.507	7
E	9.65	10.67	.380	.420	4,7
E1	6.86	8.89	.270	.350	7
E2	-	0.76	-	.030	8
e	2.54 BSC		.100 BSC		
e1	5.08 BSC		.200 BSC		
H1	5.84	6.86	.230	.270	7,8
L	12.70	14.73	.500	.580	
L1	3.56	4.06	.140	.160	3
ØP	3.54	4.08	.139	.161	
Q	2.54	3.42	.100	.135	

### LEAD ASSIGNMENTS

#### HEXFET

- 1.- GATE
- 2.- DRAIN
- 3.- SOURCE

#### IGBTs, CoPACK

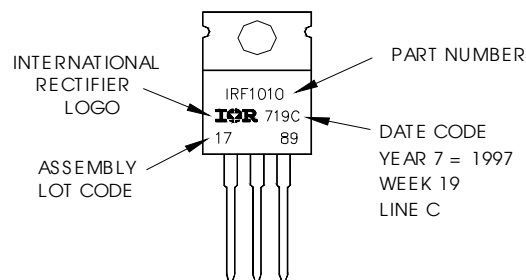
- 1.- GATE
- 2.- COLLECTOR
- 3.- EMITTER

#### DIODES

- 1.- ANODE
- 2.- CATHODE
- 3.- ANODE

## TO-220AB Part Marking Information

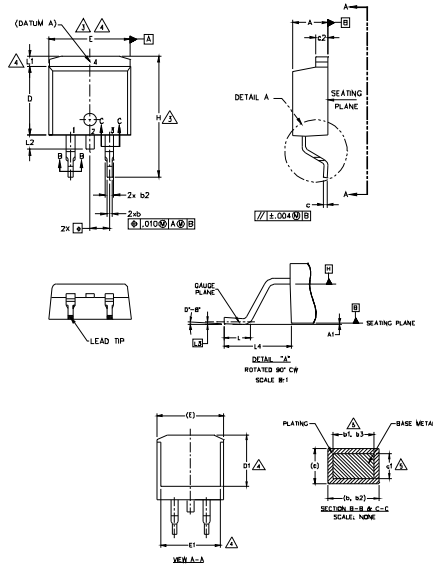
EXAMPLE: THIS IS AN IRF1010  
 LOT CODE 1789  
 ASSEMBLED ON WW 19, 1997  
 IN THE ASSEMBLY LINE "C"  
**Note:** "P" in assembly line position indicates "Lead-Free"



Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

## D<sup>2</sup>Pak Package Outline

Dimensions are shown in millimeters (inches)



SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	.160	.190	5
A1	0.00	0.254	.000	.010	
b	0.51	0.99	.020	.039	
b1	0.51	0.89	.020	.035	
b2	1.14	1.78	.045	.070	
b3	1.14	1.73	.045	.068	5
c	0.38	0.74	.015	.029	
c1	0.38	0.58	.015	.023	5
c2	1.14	1.65	.045	.065	
D	8.38	9.65	.330	.380	3
D1	6.86	—	.270	—	
E	9.65	10.67	.380	.420	3,4
E1	6.22	—	.245	—	
e	2.54 BSC		.100 BSC		4
H	14.61	15.88	.575	.625	
L	1.78	2.79	.070	.110	
L1	—	1.65	—	.066	
L2	—	1.78	—	.070	
L3	0.25 BSC		.010 BSC		
L4	4.78	5.28	.188	.208	

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
  2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
  3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 (.005") PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY AT DATUM H.
  4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
  5. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
  6. DATUM A & B TO BE DETERMINED AT DATUM PLANE H.
  7. CONTROLLING DIMENSION: INCH.
  8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-263AB.

**LEAD ASSIGNMENTS**

**DIODES**

- 1.- ANODE (TWO DIE) / OPEN (ONE DIE)
- 2.- CATHODE
- 3.- ANODE

**HEFET**

- 1.- GATE
- 2.- DRAIN
- 3.- SOURCE

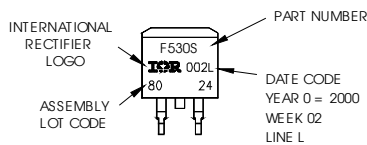
**IGBTs - CoPACK**

- 1.- GATE
- 2.- COLLECTOR
- 3.- EMITTER

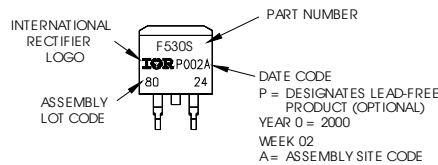
## D<sup>2</sup>Pak Part Marking Information

EXAMPLE: THIS IS AN IRF530S WITH  
LOT CODE 8024  
ASSEMBLED ON WW 02, 2000  
IN THE ASSEMBLY LINE "L"

Note: "P" in assembly line  
position indicates "Lead-Free"



**OR**



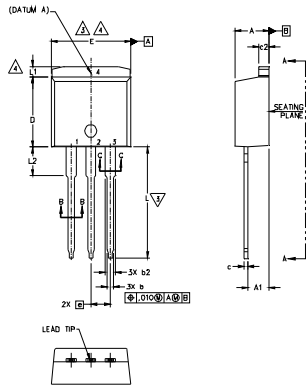
Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

# IRGB/S/SL6B60KDPbF

International  
**IR** Rectifier

## TO-262 Package Outline

Dimensions are shown in millimeters (inches)



SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	.160	.190	
A1	2.03	3.02	.080	.119	
b	0.51	0.99	.020	.039	
b1	0.51	0.89	.020	.035	5
b2	1.14	1.78	.045	.070	
b3	1.14	1.73	.045	.068	5
c	0.38	0.74	.015	.029	
c1	0.38	0.58	.015	.023	5
c2	1.14	1.65	.045	.065	
D	8.38	9.65	.330	.380	3
D1	6.86	—	.270	—	4
E	9.65	10.67	.380	.420	3,4
E1	6.22	—	.245	—	4
e	2.54 BSC		.100 BSC		
L	13.46	14.10	.530	.555	
L1	—	1.65	—	.065	
L2	3.56	3.71	.140	.146	4

**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES]
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [0.005] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
5. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
6. CONTROLLING DIMENSION: INCH.
7. — OUTLINE CONFORM TO JEDEC TO-262 EXCEPT A1(max.), b1(min.), b3(min.) AND D1(min.) WHERE DIMENSIONS DERIVED THE ACTUAL PACKAGE OUTLINE.

**LEAD ASSIGNMENTS**

**IGBTs, CoPACK**

- 1.- GATE
- 2.- COLLECTOR
- 3.- EMITTER
- 4.- COLLECTOR

**HEXFET**

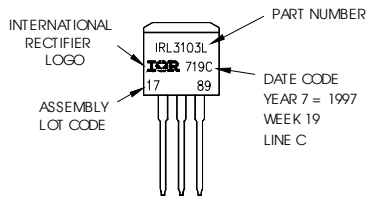
- 1.- GATE
- 2.- DRAIN
- 3.- SOURCE
- 4.- DRAIN

**DIODES**

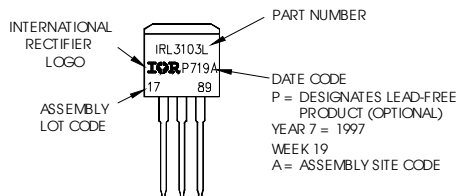
- 1.- ANODE (TWO DIE) / OPEN (ONE DIE)
- 2.- CATHODE
- 3.- ANODE
- 4.- DRAIN

## TO-262 Part Marking Information

EXAMPLE: THIS IS AN IRL3103L  
 LOT CODE 1789  
 ASSEMBLED ON WW 19, 1997  
 IN THE ASSEMBLY LINE "C"  
 Note: "P" in assembly line  
 position indicates "Lead-Free"



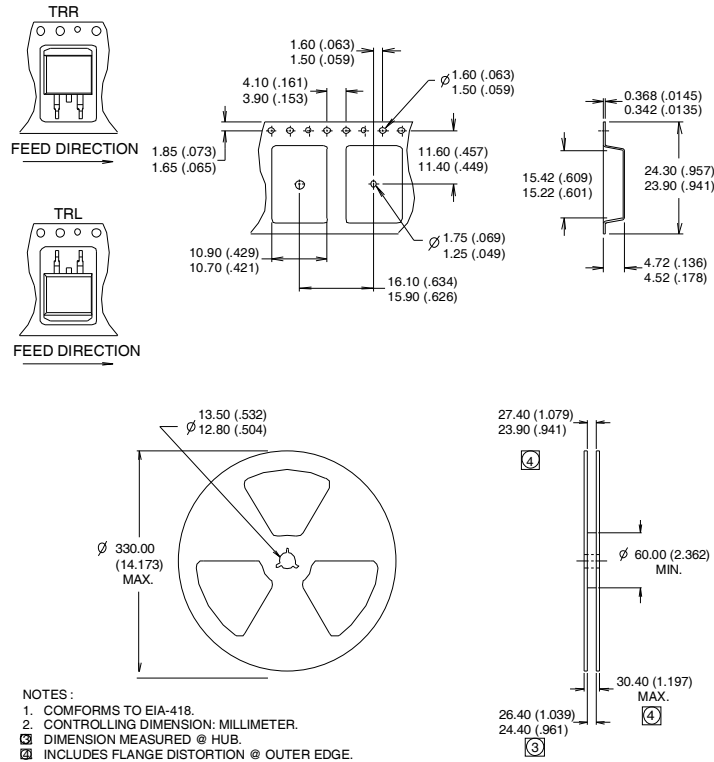
**OR**



Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

## D<sup>2</sup>Pak Tape & Reel Information

Dimensions are shown in millimeters (inches)



### Notes:

- ① This is only applied to TO-220AB package
- ② This is applied to D<sup>2</sup>Pak, when mounted on 1" square PCB ( FR-4 or G-10 Material ).  
For recommended footprint and soldering techniques refer to application note #AN-994.
- ③ Energy losses include "tail" and diode reverse recovery.
- ④  $V_{CC} = 80\%$  ( $V_{CES}$ ),  $V_{GE} = 20V$ ,  $L = 100 \mu H$ ,  $R_G = 100\Omega$ .

Data and specifications subject to change without notice.  
 This product has been designed and qualified for Industrial market.  
 Qualification Standards can be found on IR's Web site.

International  
**IR** Rectifier

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