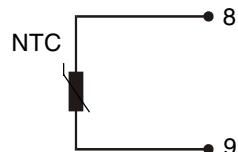
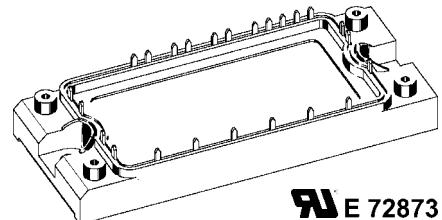
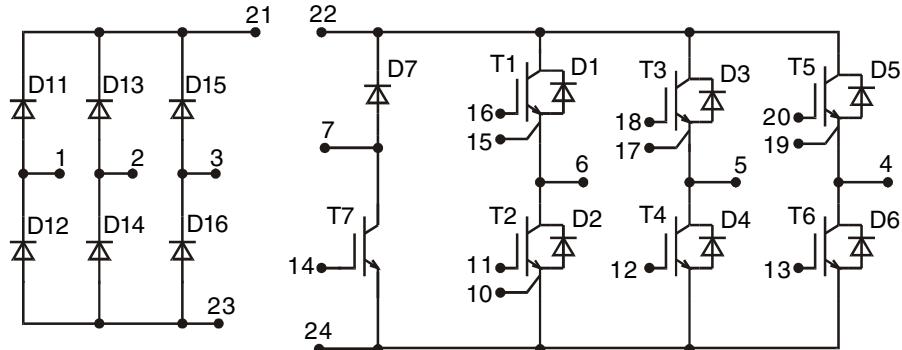


Converter - Brake - Inverter Module (CBI2)



Three Phase Rectifier	Brake Chopper	Three Phase Inverter
$V_{RRM} = 1600V$	$V_{CES} = 600 V$	$V_{CES} = 600 V$
$I_{DAVM} = 36 A$	$I_{C25} = 25 A$	$I_{C25} = 35 A$
$I_{FSM} = 300 A$	$V_{CE(sat)} = 1.9 V$	$V_{CE(sat)} = 1.9 V$

Input Rectifier Bridge D11 - D16

Symbol	Conditions	Maximum Ratings		
V_{RRM}		1600	V	
I_{FAV}	$T_c = 80^\circ\text{C}$; sine 180°	25	A	
I_{DAVM}	$T_c = 80^\circ\text{C}$; rectangular; $d = 1/3$	24	A	
I_{FSM}	$T_{VJ} = 25^\circ\text{C}$; $t = 10 \text{ ms}$; sine 50 Hz	300	A	
P_{tot}	$T_c = 25^\circ\text{C}$	100	W	

Symbol	Conditions	Characteristic Values			
		($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.	max.
V_F	$I_F = 20 A$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.4 1.3	1.6 V	V
I_R	$V_R = V_{RRM}$, $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.2	0.15 mA	mA
t_{rr}	$V_R = 100 V$; $I_F = 15 A$; $di/dt = -15 A/\mu\text{s}$		1		μs
R_{thJC}	(per diode)			1.3	K/W

Application: AC motor drives with

- Input from single or three phase grid
- Three phase synchronous or asynchronous motor
- electric braking operation

Features

- High level of integration - only one power semiconductor module required for the whole drive
- Fast rectifier diodes for enhanced EMC behaviour
- NPT IGBT technology with low saturation voltage, low switching losses, high RBSOA and short circuit ruggedness
- Epitaxial free wheeling diodes with Hiperfast and soft reverse recovery
- Industry standard package with insulated copper base plate and soldering pins for PCB mounting
- Temperature sense included

Output Inverter T1 - T6

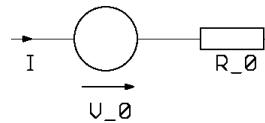
Symbol	Conditions	Maximum Ratings		
V_{CES}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
V_{GES}	Continuous	± 20		V
V_{GEM}	Transient	± 30		V
I_{C25}	$T_c = 25^\circ\text{C}$	35		A
I_{C80}	$T_c = 80^\circ\text{C}$	25		A
RBSOA	$V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^\circ\text{C}$ Clamped inductive load; $L = 100 \mu\text{H}$	$I_{CM} = 40$		A
t_{sc} (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^\circ\text{C}$ non-repetitive	$V_{CEK} \leq V_{CES}$	10	μs
P_{tot}	$T_c = 25^\circ\text{C}$	125		W

Symbol	Conditions	Characteristic Values		
		($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.
$V_{CE(sat)}$	$I_c = 20 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.9 2.2	2.3 V
$V_{GE(th)}$	$I_c = 0.5 \text{ mA}; V_{GE} = V_{CE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		0.4	0.6 mA
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$		200	nA
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 300 \text{ V}; I_c = 20 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega$		50 55 300 30 0.92 0.68	ns ns ns ns mJ mJ
C_{ies}			1100	pF
Q_{Gon}			65	nC
R_{thJC}	(per IGBT)			1 K/W

Output Inverter D1 - D6

Symbol	Conditions	Maximum Ratings		
I_{F25}	$T_c = 25^\circ\text{C}$	35		A
I_{F80}	$T_c = 80^\circ\text{C}$	24		A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 20 \text{ A}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		2.1 1.4	V V
I_{RM} t_{rr}	$I_F = 15 \text{ A}; di_F/dt = -400 \text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 300 \text{ V}; V_{GE} = 0 \text{ V}$		13 90	A ns
R_{thJC}				2.1 K/W

Equivalent Circuits for Simulation**Conduction****D11 - D16**

Rectifier Diode (typ. at $T_J = 125^\circ\text{C}$)
 $V_o = 1.12 \text{ V}; R_o = 0.11 \text{ m}\Omega$

T1 - T6 / D1 - D6

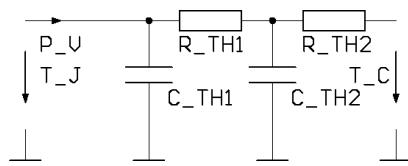
IGBT (typ. at $V_{GE} = 15 \text{ V}; T_J = 125^\circ\text{C}$)
 $V_o = 0.9 \text{ V}; R_o = 65 \text{ m}\Omega$

Free Wheeling Diode (typ. at $T_J = 125^\circ\text{C}$)
 $V_o = 1.09 \text{ V}; R_o = 12 \text{ m}\Omega$

T7 / D7

IGBT (typ. at $V_{GE} = 15 \text{ V}; T_J = 125^\circ\text{C}$)
 $V_o = 0.99 \text{ V}; R_o = 81 \text{ m}\Omega$

Free Wheeling Diode (typ. at $T_J = 125^\circ\text{C}$)
 $V_o = 1.07 \text{ V}; R_o = 23 \text{ m}\Omega$

Thermal Response**D11 - D16**

Rectifier Diode (typ.)
 $C_{th1} = 0.106 \text{ J/K}; R_{th1} = 1.06 \text{ K/W}$
 $C_{th2} = 0.79 \text{ J/K}; R_{th2} = 0.239 \text{ K/W}$

T1 - T6 / D1 - D6

IGBT (typ.)
 $C_{th1} = 0.108 \text{ J/K}; R_{th1} = 0.79 \text{ K/W}$
 $C_{th2} = 0.921 \text{ J/K}; R_{th2} = 0.209 \text{ K/W}$

Free Wheeling Diode (typ.)

$C_{th1} = 0.065 \text{ J/K}; R_{th1} = 1.766 \text{ K/W}$
 $C_{th2} = 0.636 \text{ J/K}; R_{th2} = 0.344 \text{ K/W}$

T7 / D7

IGBT (typ.)
 $C_{th1} = 0.077 \text{ J/K}; R_{th1} = 1.111 \text{ K/W}$
 $C_{th2} = 0.732 \text{ J/K}; R_{th2} = 0.279 \text{ K/W}$

Free Wheeling Diode (typ.)

$C_{th1} = 0.043 \text{ J/K}; R_{th1} = 2.738 \text{ K/W}$
 $C_{th2} = 0.54 \text{ J/K}; R_{th2} = 0.462 \text{ K/W}$

Brake Chopper T7

Symbol	Conditions	Maximum Ratings		
V_{CES}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
V_{GES}	Continuous	± 20		V
V_{GEM}	Transient	± 30		V
I_{C25}	$T_C = 25^\circ\text{C}$	25		A
I_{C80}	$T_C = 80^\circ\text{C}$	18		A
RBSOA	$V_{GE} = \pm 15 \text{ V}$; $R_G = 68 \Omega$; $T_{VJ} = 125^\circ\text{C}$ Clamped inductive load; $L = 100 \mu\text{H}$	$I_{CM} = 30$ $V_{CEK} \leq V_{CES}$		A
t_{sc} (SCSOA)	$V_{CE} = V_{CES}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 68 \Omega$; $T_{VJ} = 125^\circ\text{C}$ non-repetitive	10		μs
P_{tot}	$T_C = 25^\circ\text{C}$	90		W

Symbol	Conditions	Characteristic Values		
		($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.
$V_{CE(sat)}$	$I_C = 15 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.9 2.1	2.3 V V
$V_{GE(th)}$	$I_C = 0.4 \text{ mA}$; $V_{GE} = V_{CE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		0.3	0.5 mA mA
I_{GES}	$V_{CE} = 0 \text{ V}$; $V_{GE} = \pm 20 \text{ V}$			200 nA
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 300 \text{ V}$; $I_C = 15 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$; $R_G = 68 \Omega$		30 50 270 40 0.7 0.5	ns ns ns ns mJ mJ
C_{ies}		800		pF
Q_{Gon}		57		nC
R_{thJC}			1.39	K/W

Brake Chopper D7

Symbol	Conditions	Maximum Ratings		
V_{RRM}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
I_{F25}	$T_C = 25^\circ\text{C}$	22		A
I_{F80}	$T_C = 80^\circ\text{C}$	15		A
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 15 \text{ A}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		1.5	2.2 V V
I_R	$V_R = V_{RRM}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		0.07	0.06 mA mA
I_{RM} t_{rr}	$I_F = 10 \text{ A}$; $di_F/dt = -400 \text{ A}/\mu\text{s}$; $T_{VJ} = 125^\circ\text{C}$ $V_R = 300 \text{ V}$		11 80	A ns
R_{thJC}				3.2 K/W

Temperature Sensor NTC

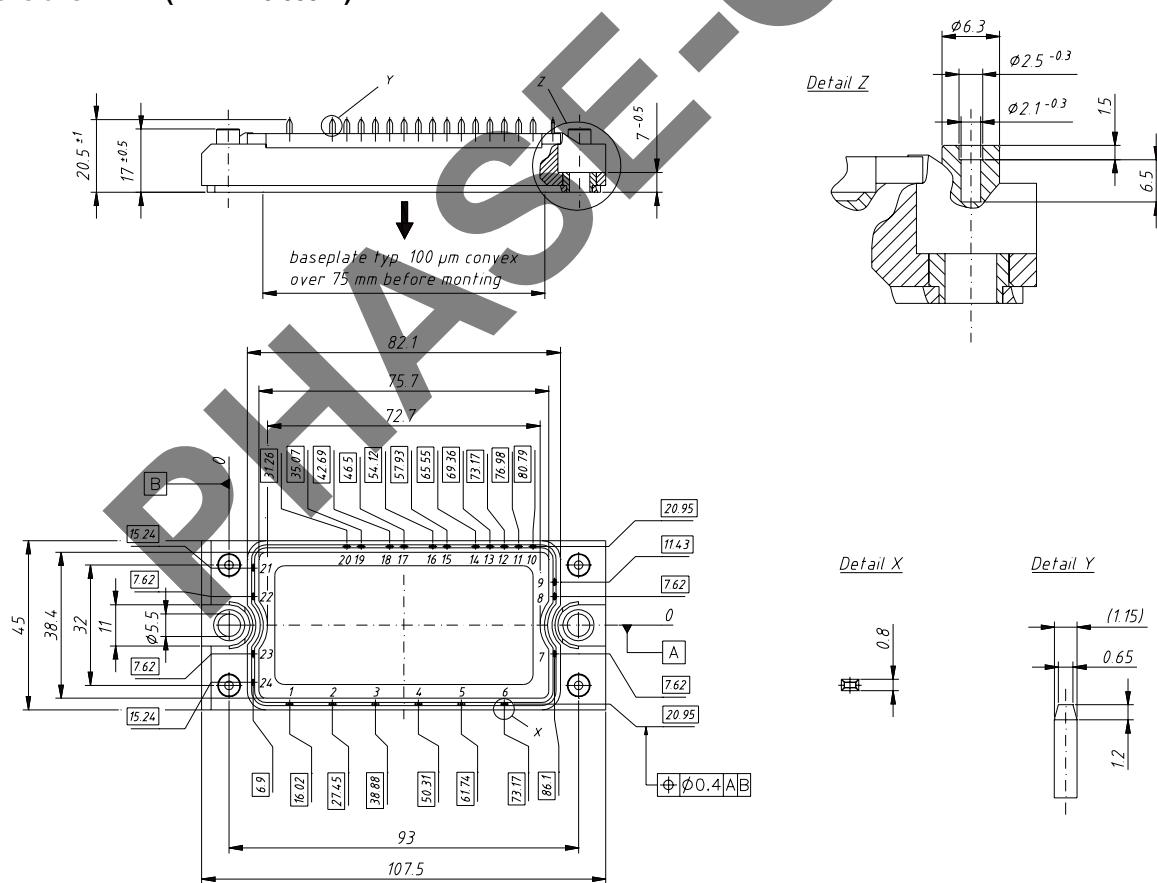
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
R_{25} $B_{25/50}$	$T = 25^\circ\text{C}$	4.75	5.0 3375	5.25 k Ω K

Module

Symbol	Conditions	Maximum Ratings		
T_{VJ}	Operating	-40...+125	$^\circ\text{C}$	
T_{JM}		150	$^\circ\text{C}$	
T_{stg}		-40...+125	$^\circ\text{C}$	
V_{ISOL}	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	2500	V~	
M_d	Mounting torque (M5)	2.7 - 3.3	Nm	

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{pin-chip}$			5	m Ω
d_s	Creepage distance on surface	6		mm
d_A	Strike distance in air	6		mm
R_{thCH}	with heatsink compound	0.02		K/W
Weight		180		g

Dimensions in mm (1 mm = 0.0394")



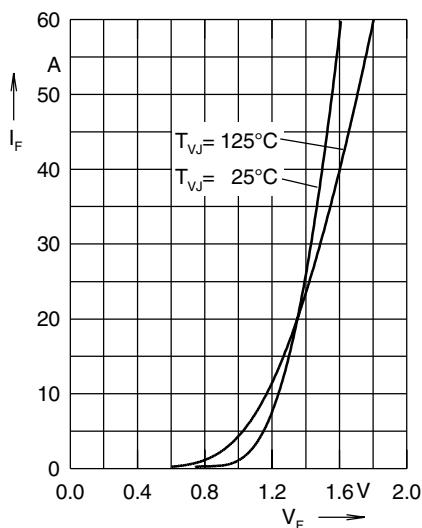
Input Rectifier Bridge D11 - D16

Fig. 1 Forward current versus voltage drop per diode

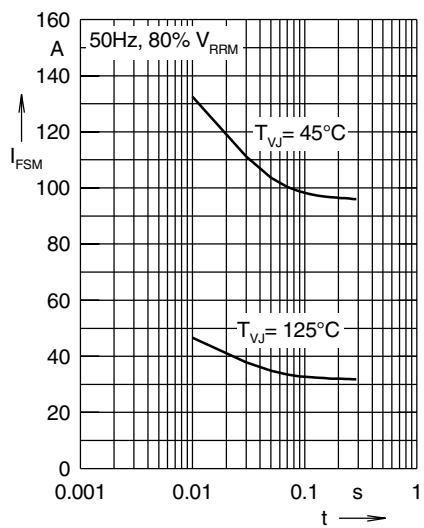


Fig. 2 Surge overload current

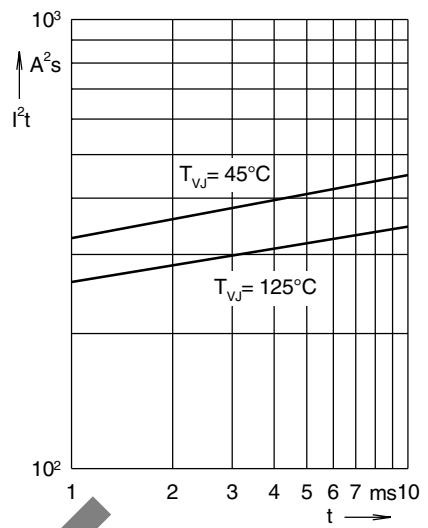
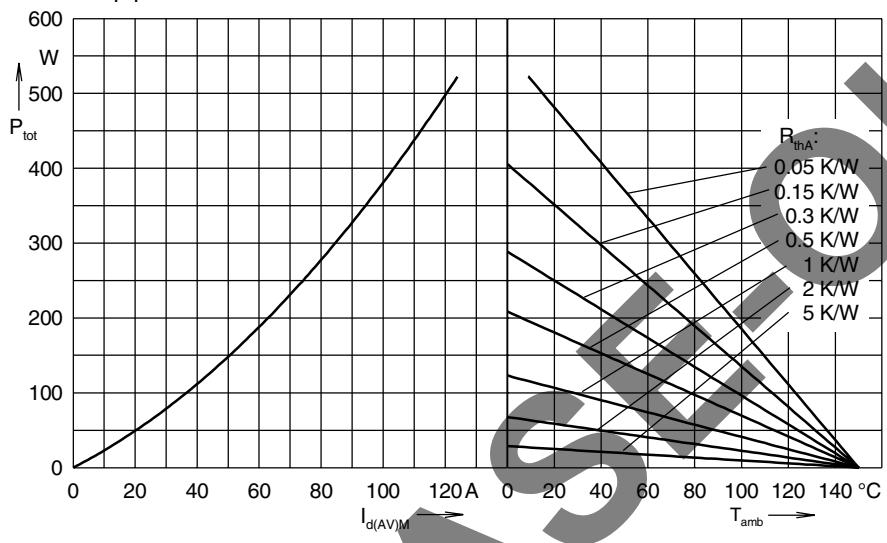
Fig. 3 I^2t versus time per diode

Fig. 4 Power dissipation versus direct output current and ambient temperature, sin 1

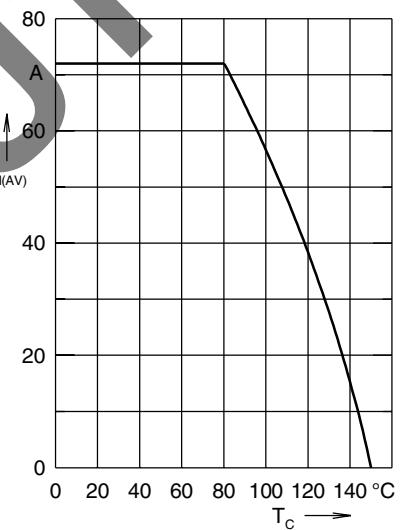


Fig. 5 Max. forward current versus case temperature

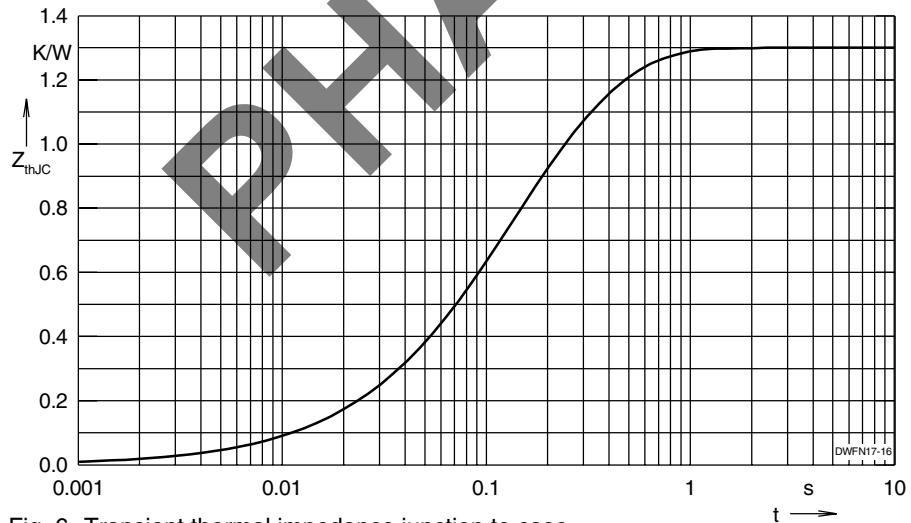
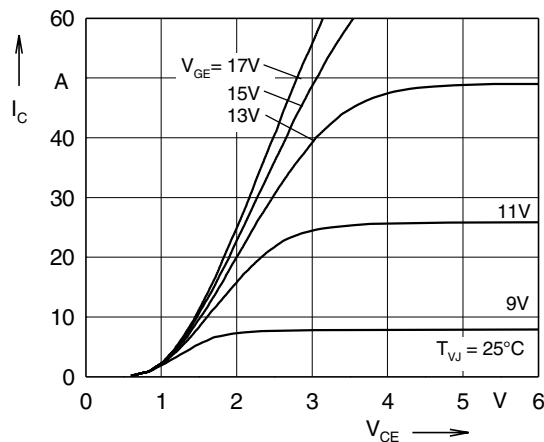
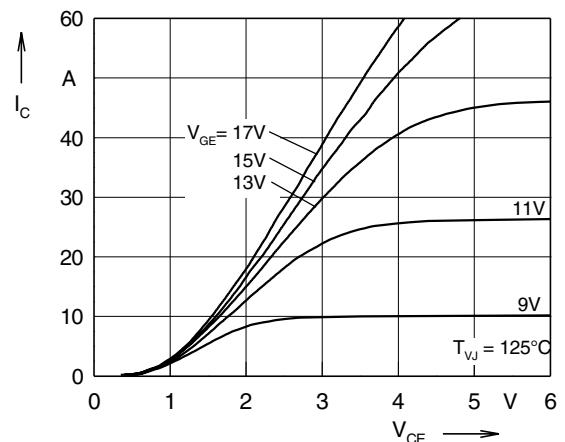
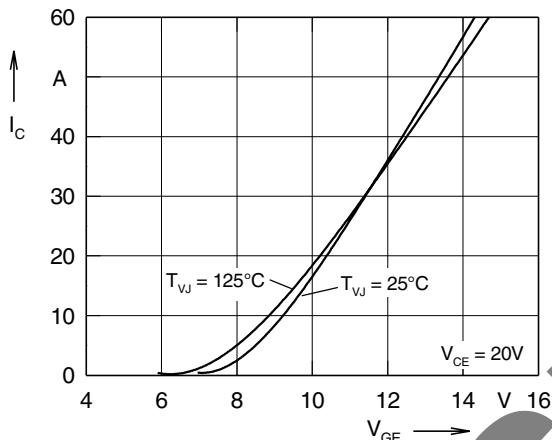
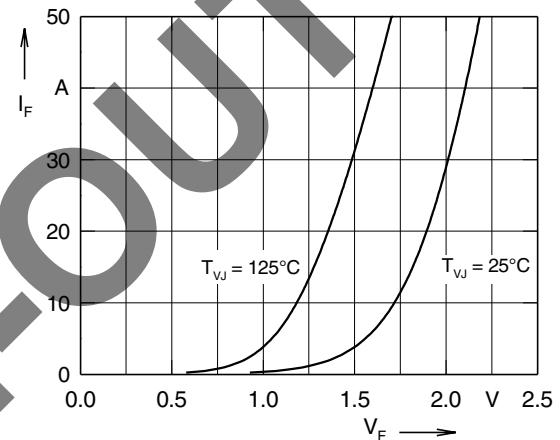
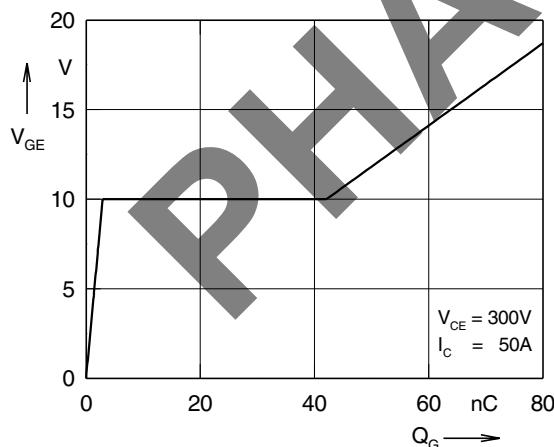
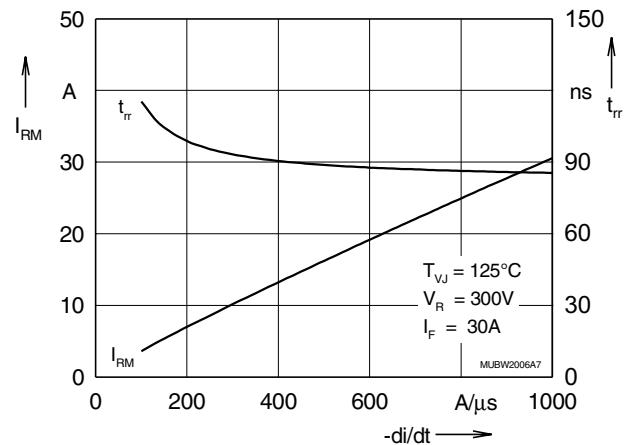


Fig. 6 Transient thermal impedance junction to case

Output Inverter T1 - T6 / D1 - D6

Fig. 7 Typ. output characteristics

Fig. 8 Typ. output characteristics

Fig. 9 Typ. transfer characteristics

Fig. 10 Typ. forward characteristics of free wheeling diode

Fig. 11 Typ. turn on gate charge

Fig. 12 Typ. turn off characteristics of free wheeling diode

Output Inverter T1 - T6 / D1 - D6

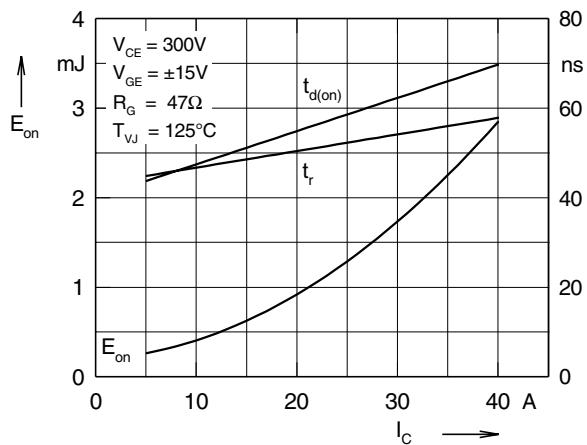


Fig. 13 Typ. turn on energy and switching times versus collector current

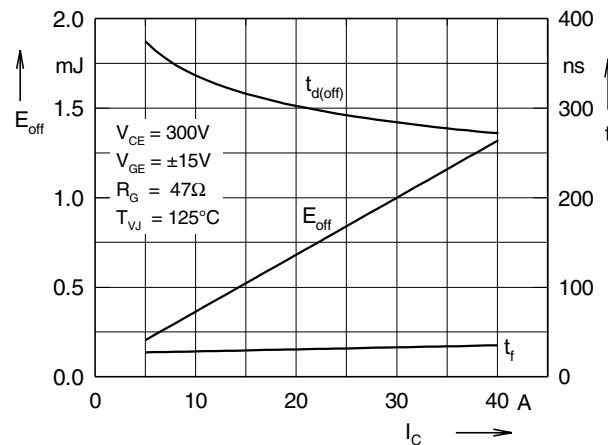


Fig. 14 Typ. turn off energy and switching times versus collector current

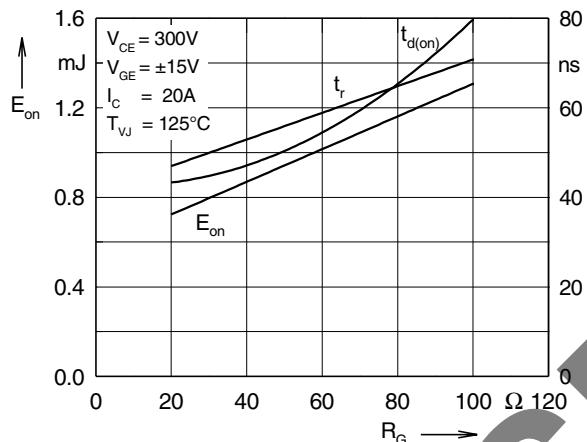


Fig. 15 Typ. turn on energy and switching times versus gate resistor

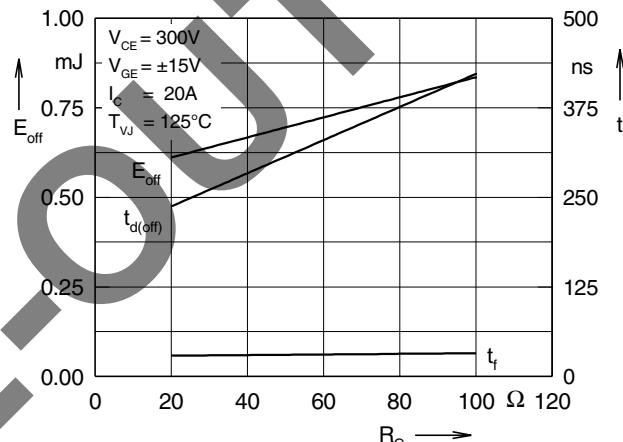


Fig. 16 Typ. turn off energy and switching times versus gate resistor

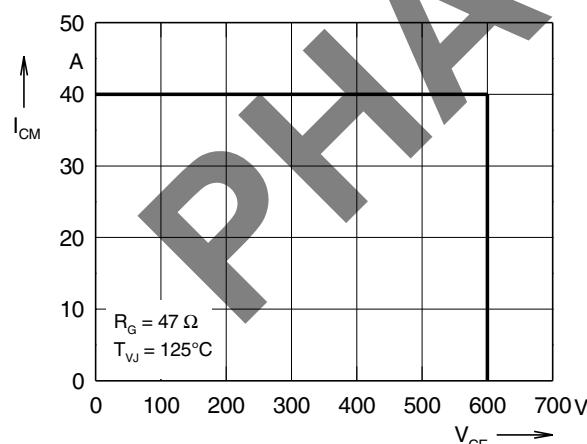


Fig. 17 Reverse biased safe operating area RBSOA

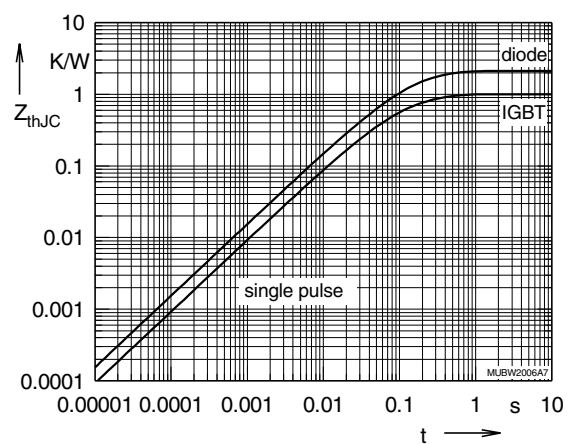


Fig. 18 Typ. transient thermal impedance

Brake Chopper T7 / D7

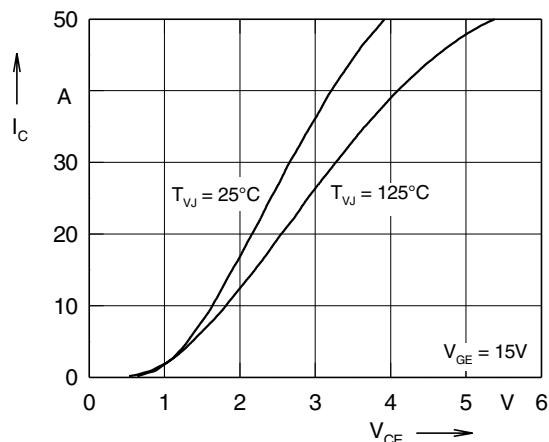


Fig. 19 Typ. output characteristics

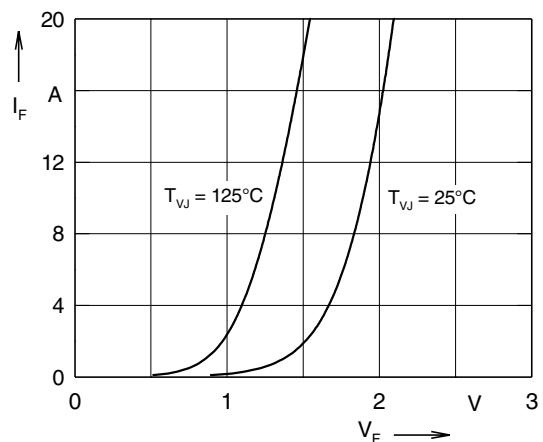


Fig. 20 Typ. forward characteristics of free wheeling diode

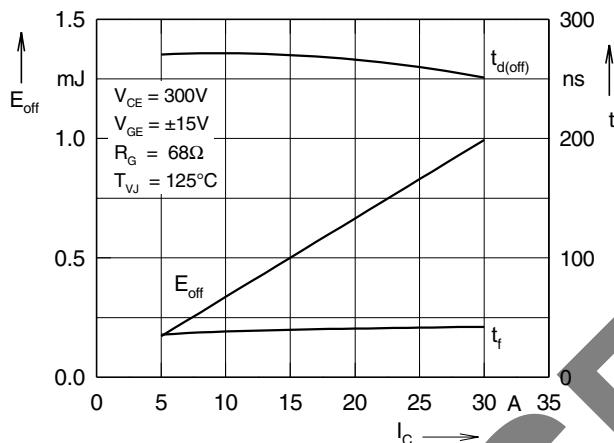


Fig. 21 Typ. turn off energy and switching times versus collector current

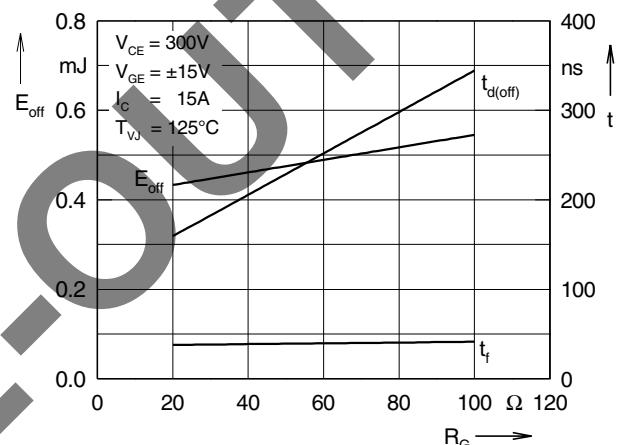


Fig. 22 Typ. turn off energy and switching times versus gate resistor

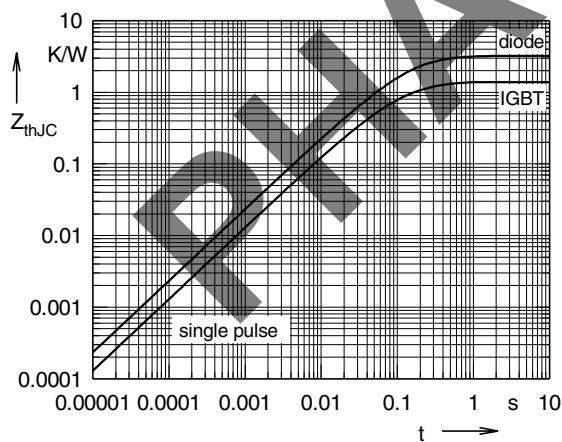


Fig. 23 Typ. transient thermal impedance

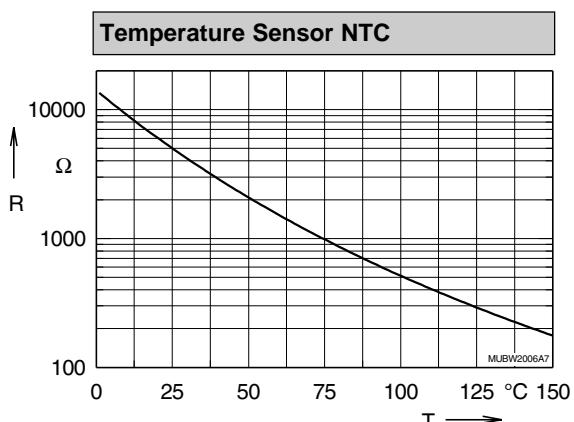


Fig. 24 Typ. thermistorresistance versus temperature

Данный компонент на территории Российской Федерации**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибуторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ Р В 0015-002 и ЭС РД 009

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