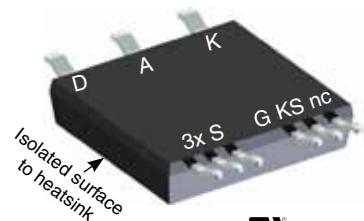
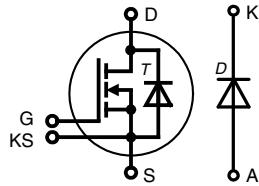


CoolMOS™¹⁾ Power MOSFET

ISOPLUS™ - electrically isolated surface to heatsink
Surface Mount Power Device

V_{DSS} = 600 V
I_{D25} = 50 A
R_{DS(on) max} = 45 mΩ

Preliminary data



E72873

MOSFET T

Symbol	Conditions	Maximum Ratings		
V _{DSS}	T _{VJ} = 25°C to 150°C	600	V	
V _{GS}		±20	V	
I _{D25}	T _C = 25°C	50	A	
I _{D80}	T _C = 80°C	38	A	
E _{AS}	single pulse	1950	mJ	
E _{AR}	repetitive } I _D = 11 A; T _C = 25°C	3	mJ	
dV/dt	MOSFET dV/dt ruggedness V _{DS} = 0...480 V	50	V/ns	

Symbol	Conditions	Characteristic Values			
(T _{VJ} = 25°C, unless otherwise specified)					
		min.	typ.	max.	
R _{DSon}	I _D = 44 A; V _{GS} = 10 V		40	45	mΩ
V _{GS(th)}	I _D = 3 mA; V _{DS} = V _{GS}	2.5	3	3.5	V
I _{DSS}	V _{DS} = V _{DSS} ; V _{GS} = 0 V; T _{VJ} = 25°C T _{VJ} = 125°C		10	50	μA
I _{GSS}	V _{DS} = 0 V; V _{GS} = ± 20 V		100		nA
t _{d(on)} t _r t _{d(off)} t _f E _{on} E _{off} E _{rec}	Inductive switching boost mode with diode D V _{DS} = 380 V; I _D = 30 A V _{GS} = 10 V; R _G = 33 Ω		80 40 750 40 1.3 0.45 0.35		ns ns ns ns mJ mJ mJ
C _{iss} C _{oss}	V _{GS} = 0 V; V _{DS} = 100 V; f = 1 MHz	6800 320			pF pF
Q _g Q _{gs} Q _{gd}	V _{DS} = 400 V; I _D = 44 A V _{GS} = 10 V; R _G = 3.3 Ω	150 35 50	190		nC nC nC
R _{thJC} R _{thJH}	with heatsink compound (IXYS test setup)	tbd	0.4 tbd		K/W K/W

Features

- **Fast CoolMOS™¹⁾** power MOSFET 4th generation
 - high blocking capability
 - lowest resistance
 - avalanche rated for unclamped inductive switching (UIS)
 - low thermal resistance due to reduced chip thickness
- **Package**
 - isolated surface to heatsink
 - low coupling capacity between pins and heatsink
 - PCB space saving
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability

Applications

- Buck / boost chopper
- Optimized for boost configuration
- PFC stage

¹⁾ CoolMOS™ is a trademark of Infineon Technologies AG.

Source-Drain Diode of MOSFET T

Symbol	Conditions	Maximum Ratings		
I _{S25}	T _C = 25°C	50	A	
I _{S80}	T _C = 80°C	38	A	

Symbol	Conditions	Characteristic Values		
	(T _{VJ} = 25°C, unless otherwise specified)			
		min.	typ.	max.
V _{SD}	I _F = 44 A; V _{GS} = 0 V		0.9	1.0
t _{rr} Q _{RM} I _{RM}	I _F = 44 A; -di _F /dt = 100 A/μs; V _R = 400 V	600 17 60		ns μC A

Diode D

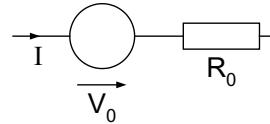
Symbol	Conditions	Maximum Ratings		
I _{F25}	T _C = 25°C; DC	96	A	
I _{F80}	T _C = 80°C; DC	61	A	

Symbol	Conditions	Characteristic Values		
	(T _{VJ} = 25°C, unless otherwise specified)	min.	typ.	max.
V _{RRM}	T _{VJ} = 25°C			600 V
V _F	I _F = 25 A	T _{VJ} = 25°C T _{VJ} = 125°C	1.2 1.3	1.4 V
I _R	V _R = V _{RRM}	T _{VJ} = 25°C T _{VJ} = 125°C	tbd	150 μA mA
I _{RM}	I _F = 30 A; V _R = 350 V -di/dt = 240 A/μs	T _{VJ} = 100°C		10 A
t _{rr}	I _F = 1 A; V _R = 30 V -di/dt = 100 A/μs	T _{VJ} = 100°C	35	50 ns
R _{thJC}	per diode			0.7 K/W
R _{thJH}	with heatsink compound (IXYS test setup)		tbd	k/W

Component

Symbol	Conditions	Maximum Ratings		
T _{VJ}		-55...+150	°C	
T _{stg}		-55...+125	°C	
V _{ISOL}	I _{ISOL} ≤ 1 mA; 50/60 Hz	2500	V~	
F _c	mounting force	40 ... 130	N	

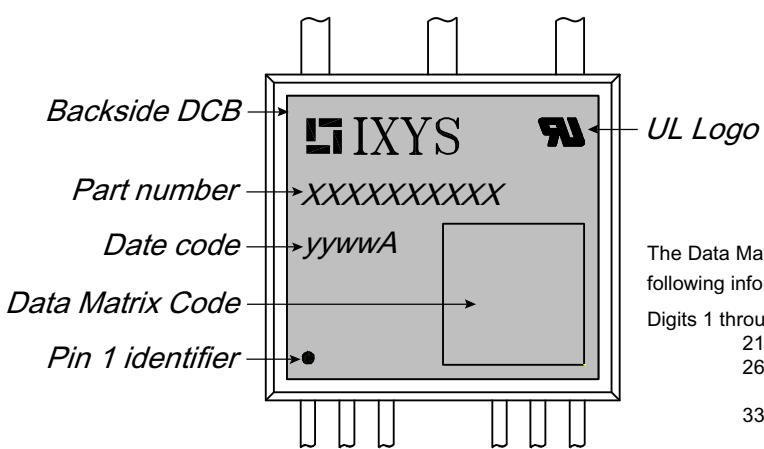
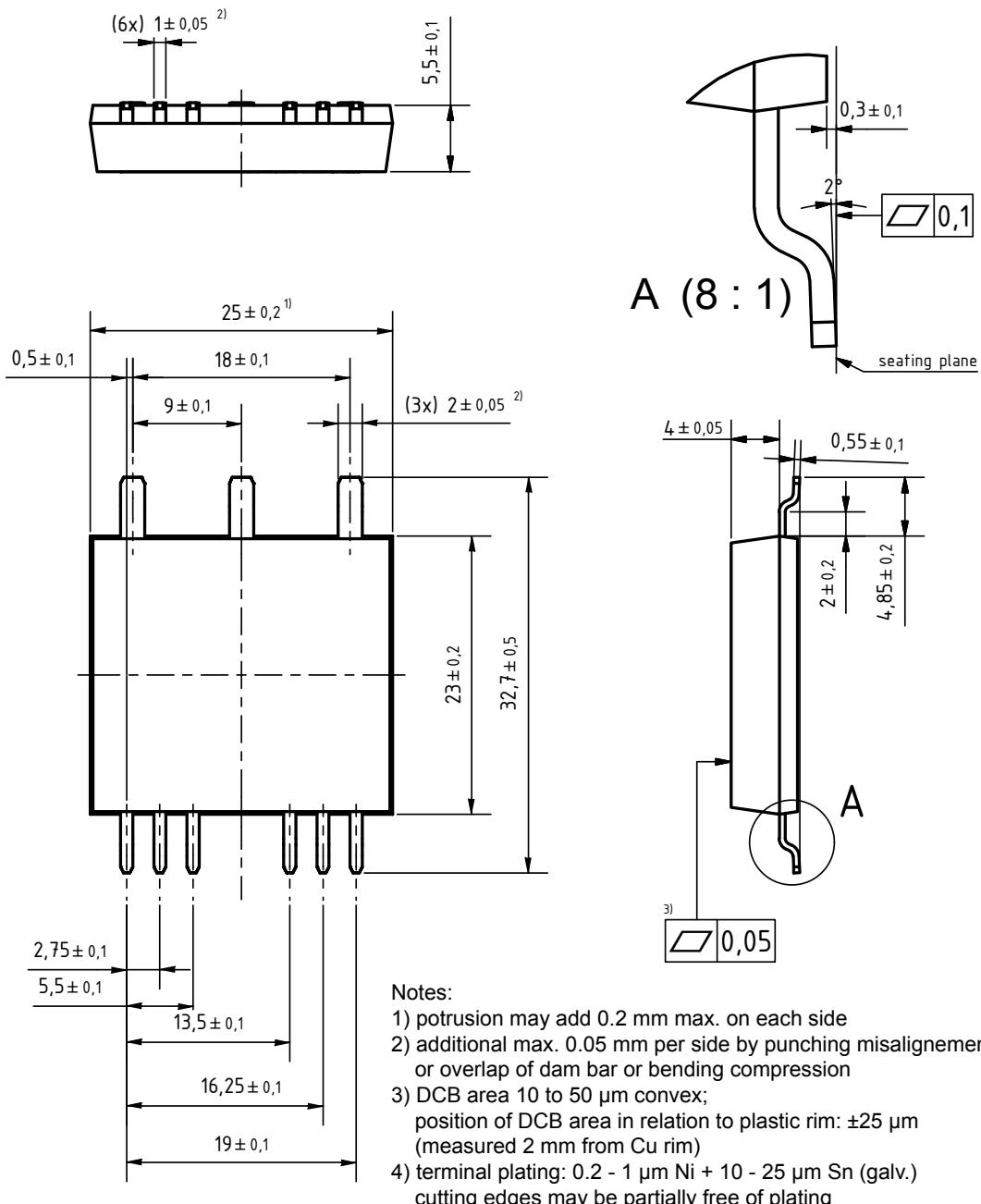
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
C _P	coupling capacity between shorted pins and backside metal		90	pF
d _S , d _A	pin - pin	1.65		mm
d _S , d _A	pin - backside metal	4		mm
CTI		400		
Weight			8	g

Equivalent Circuits for Simulation**Conduction**

Boost Diode (typ. at T_J = 125°C)
V_d = tbd V; R_d = tbd mΩ

Ordering	Part Number	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MKE38RK600DFELB-TRR	MKE38RK600DFELB	Tape & Reel	200	510479
	MKE38RK600DFELB	MKE38RK600DFELB	Blister	45	510231

20111102a



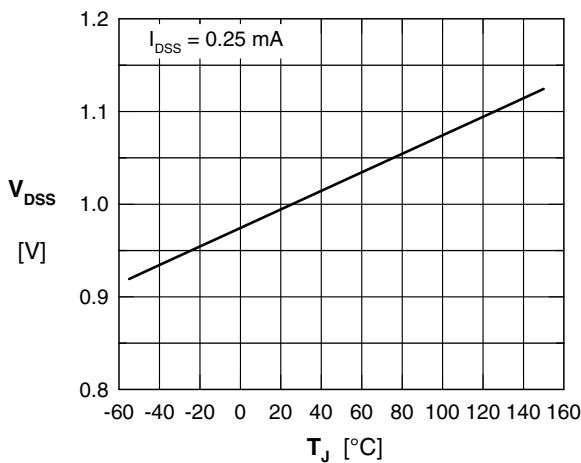


Fig.1 Drain source breakdown voltage versus temperature T_{VJ}

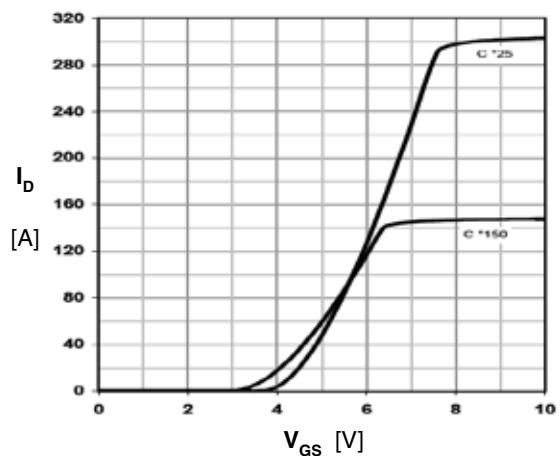


Fig. 2 Typ. transfer characteristics

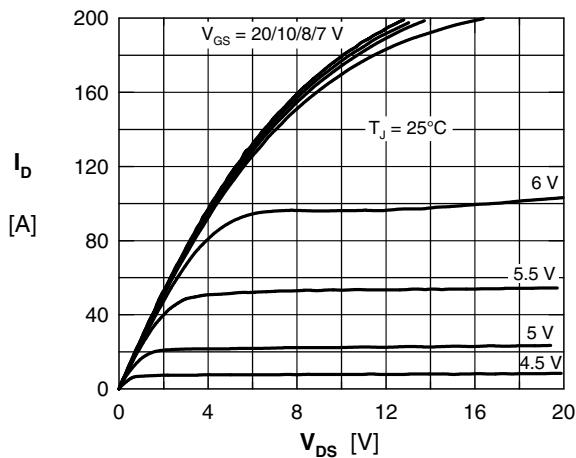


Fig. 3 Typical output characteristics

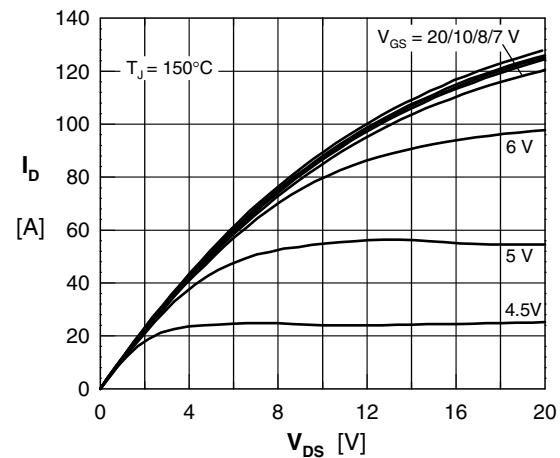


Fig. 4 Typical output characteristics

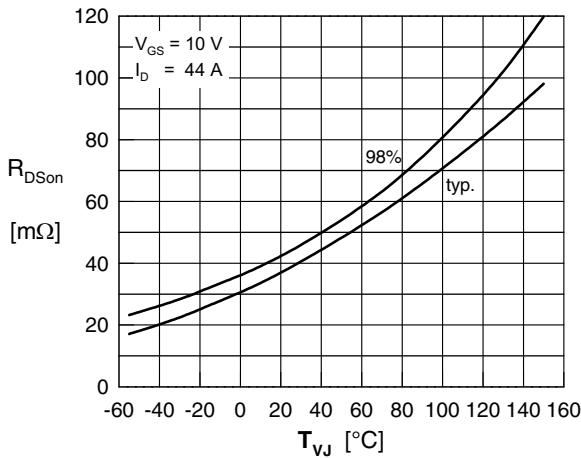


Fig.5 Drain source on-state resistance $R_{DS(on)}$ vs. junction temperature T_{VJ}

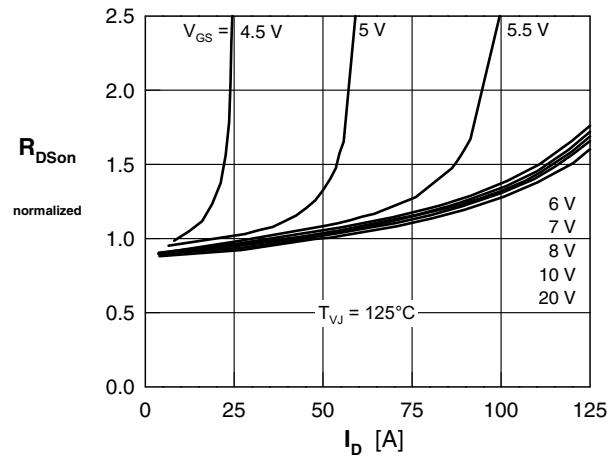


Fig. 6 Drain source on-state resistance, $R_{DS(on)}$ versus I_D

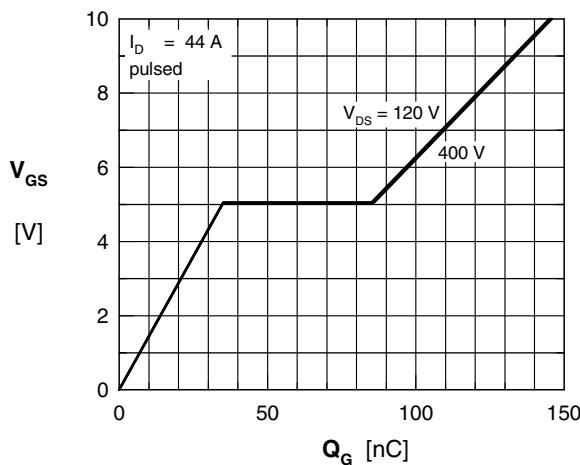


Fig. 7 Typ. turn-on gate charge

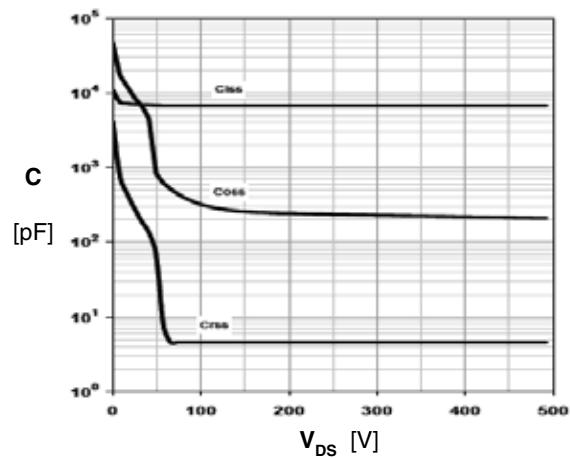


Fig. 8 Typ. capacities, MOSFET only

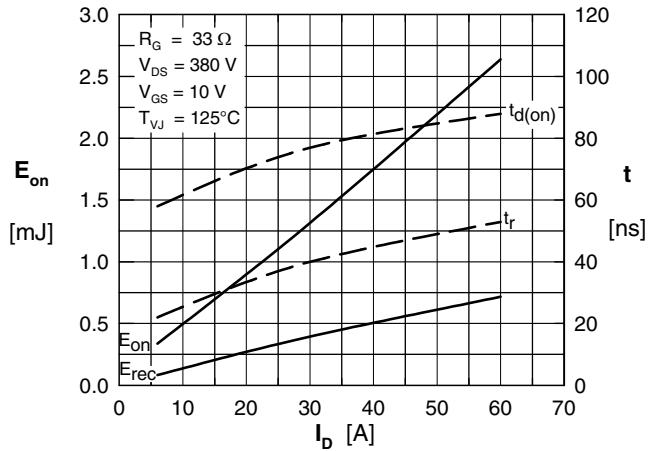


Fig. 9 Typ. turn-on energy and switching times vs. collector current, induktive switching

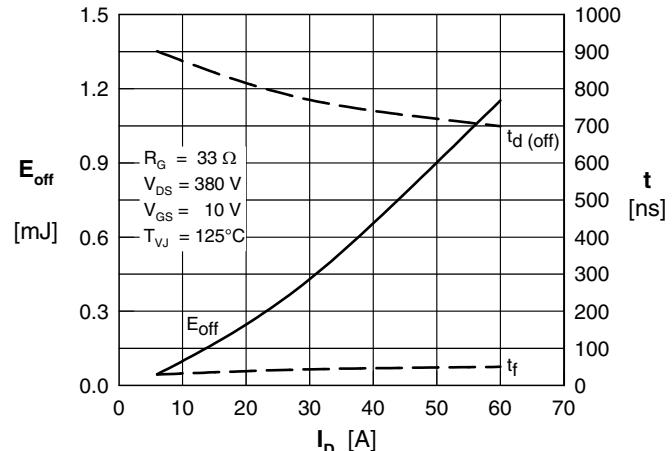


Fig. 10 Typ. turn-off energy and switching times vs. collector-current, induktive switching

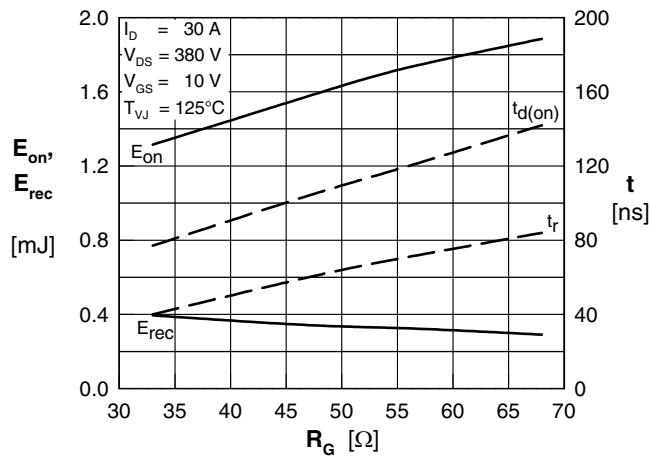


Fig. 11 Typ. turn-on energy and switching times vs. gate resistor, induktive switching

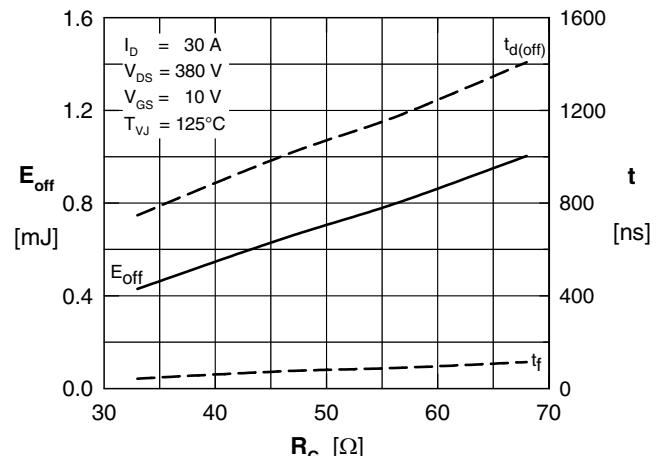


Fig. 12 Typ. turn-off energy and switching times vs. gate resistor, induktive switching

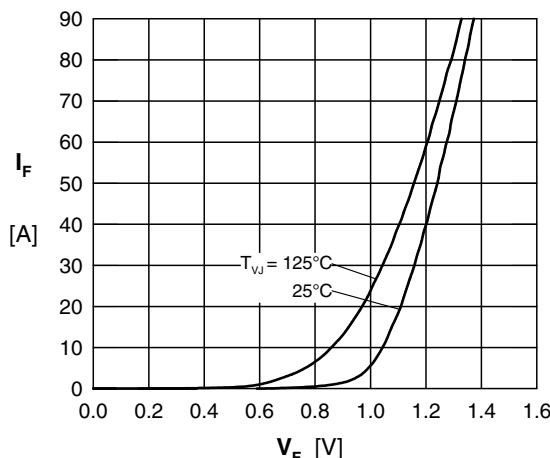


Fig. 13 Typ. forward characteristics of diode D

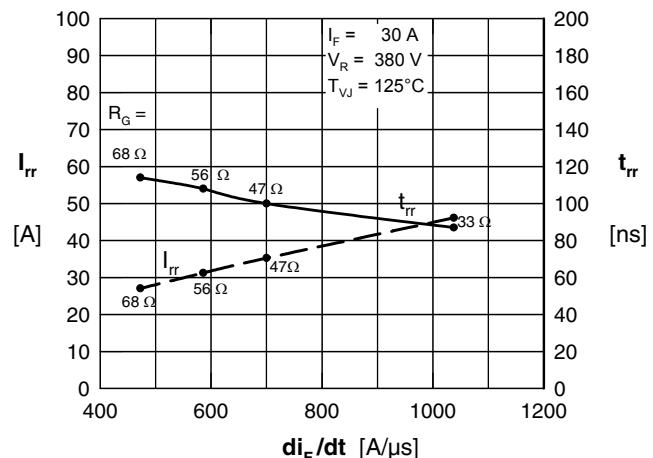


Fig. 14 Typ. reverse recovery characteristics of diode D

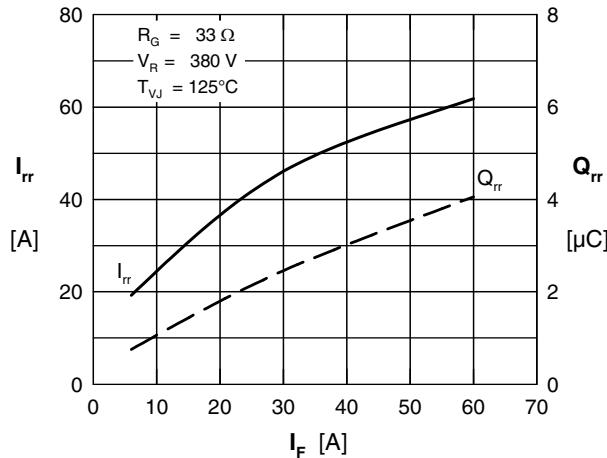


Fig. 15 Typ. reverse recovery characteristics of diode D



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