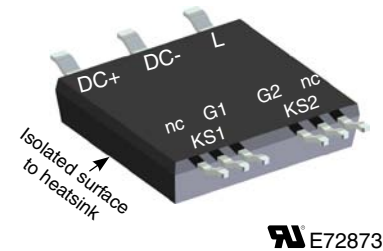
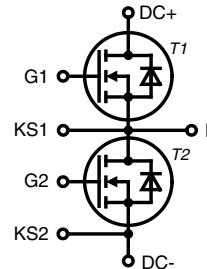


CoolMOS™ 1) Power MOSFET

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

$$\begin{aligned} I_{D25} &= 50 \text{ A} \\ V_{DSS} &= 600 \text{ V} \\ R_{DS(on) \text{ max}} &= 45 \text{ m}\Omega \end{aligned}$$



E72873

MOSFETs T1, T2					
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} E _{AR}	single pulse repetitive	1950 3	mJ mJ		
I _D = 11 A; T _C = 25°C					
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		50	10	μA μA
I _{GSS}	V _{DS} = 0 V; V _{GS} = ± 20 V			100	nA
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
t _{d(on)} t _r t _{d(off)} t _f E _{on} E _{off}	Resistive switching T _{VJ} = 125°C V _{DS} = 380 V; I _D = 30 A V _{GS} = 10 V; R _G = 3.3 Ω		22 10 120 12 70 22		ns ns ns ns μJ μJ
t _{d(on)} t _r t _{d(off)} t _f E _{on} E _{off} E _{rec(off)}		Inductive switching T _{VJ} = 25°C V _{DS} = 380 V; I _D = 30 A V _{GS} = 10 V; R _G = 330 Ω		900 400 520 18 5.2 0.18	
R _{thJC} R _{thJH}	with heatsink compound; IXYS test setup		0.6	0.4	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

- Switch mode power supplies (SMPS)
- Soft switching topologie
- Resonant converter

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

Source-Drain Diodes of T1/T2

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			0.95	1.25	V
t _{rr}	I _F = 44 A; -di _F /dt = 100 A/μs; V _R = 400 V			600		ns
Q _{RM}				17		μC
I _{RM}				60		A

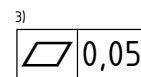
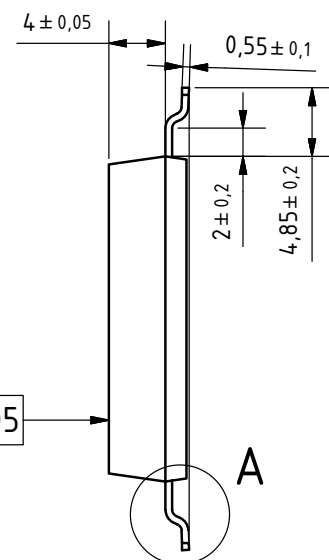
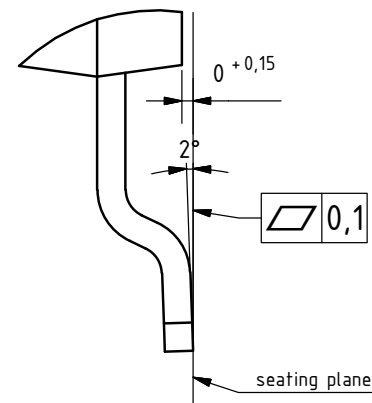
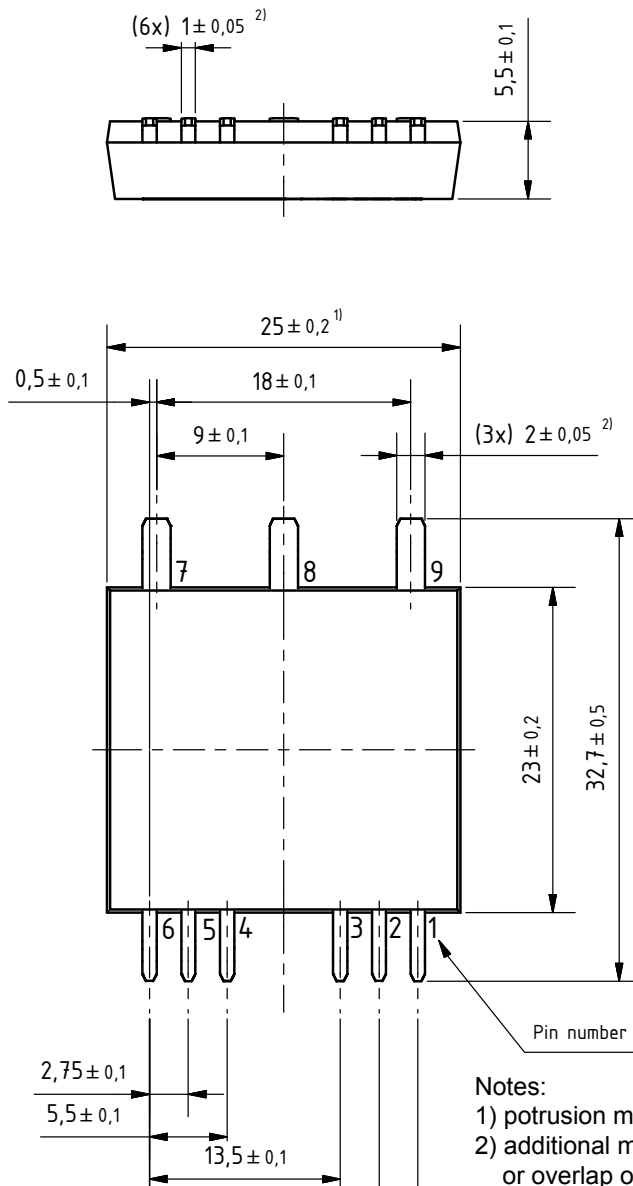
Component

Symbol	Conditions	Maximum Ratings			
T_{VJ}			-55...+150		°C
T_{stg}			-55...+125		°C
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$		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

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MKE38P600LB-TRR	MKE38P600LB	Tape&Reel	200	510486
	MKE38P600LB	MKE38P600LB	Blister	45	480601

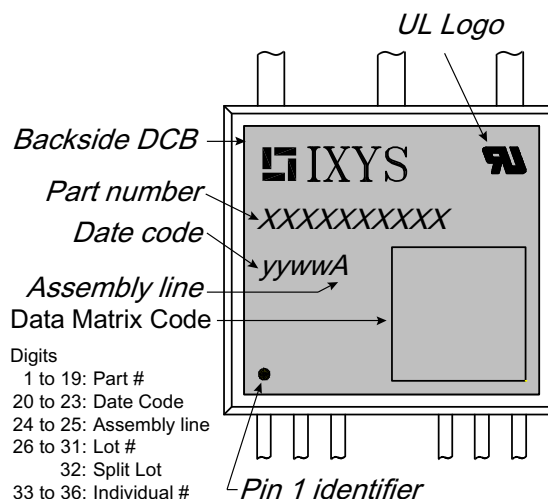
Dimensions in mm
(1 mm = 0.0394")

A (8 : 1)



Notes:

- 1) protrusion may add 0.2 mm max. on each side
- 2) additional max. 0.05 mm per side by punching misalignment or overlap of dam bar or bending compression



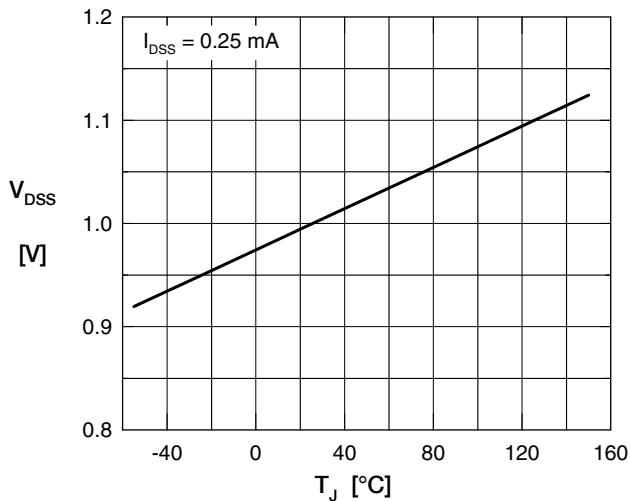


Fig.1 Drain source breakdown voltage versus temperature T_{VJ}

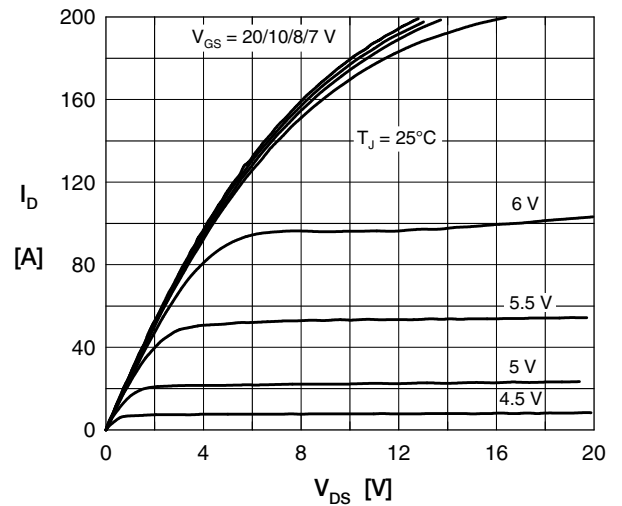


Fig. 2 Typ. output characteristics

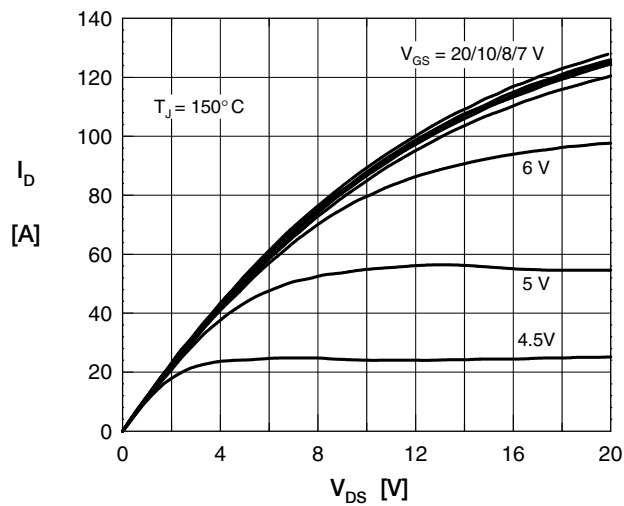


Fig. 3 Typ. output characteristics

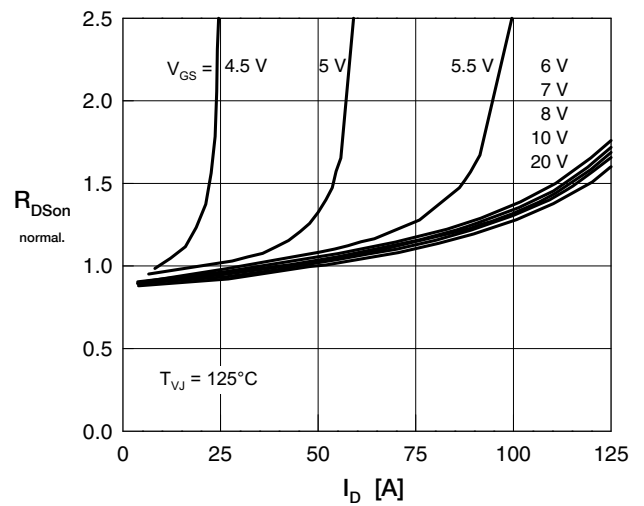


Fig. 4 Drain source on-state resistance $R_{DS(on)}$ versus I_D

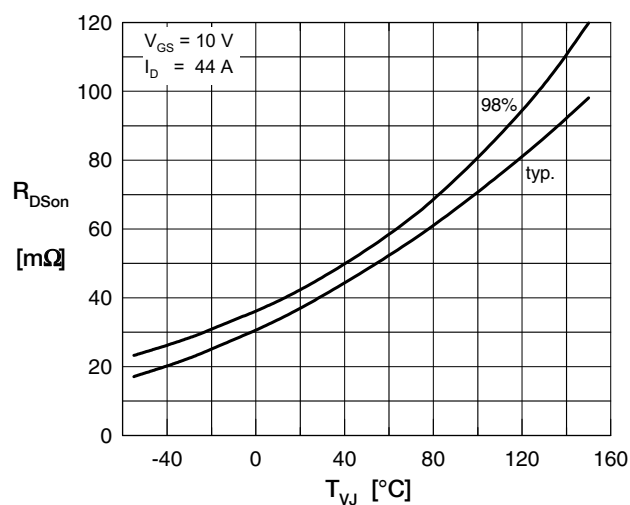


Fig.5 Drain source on-state resistance $R_{DS(on)}$ vs. junction temperature T_{VJ}

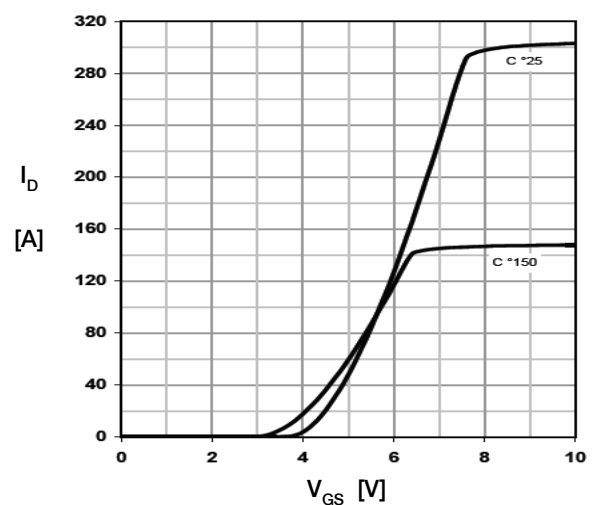


Fig.6 Typ. transfer characteristics

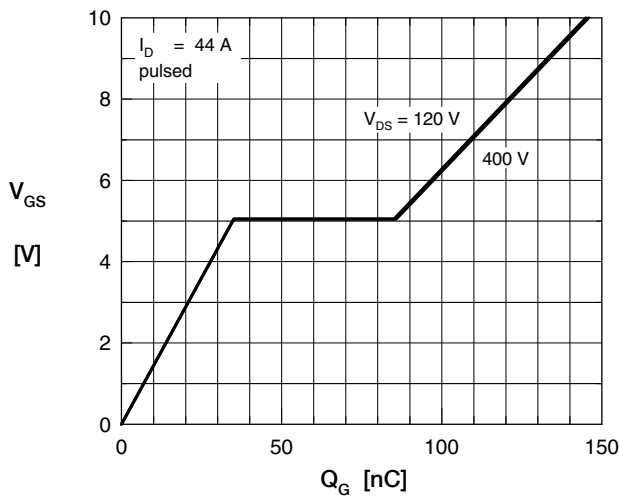


Fig. 7 Typ. turn-on gate charge

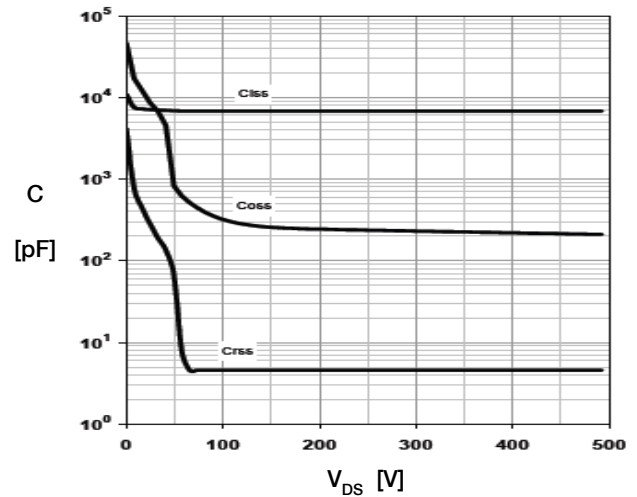


Fig. 8 Typ. capacities, MOSFET only

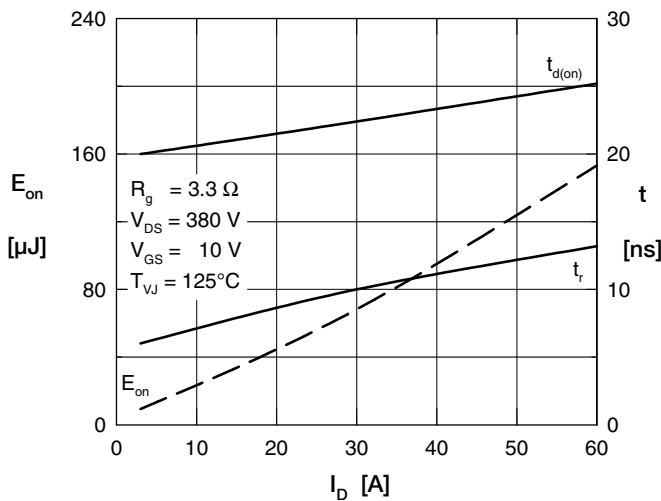


Fig.9 Typ. turn-on energy and switching times versus collector current, resistive switching

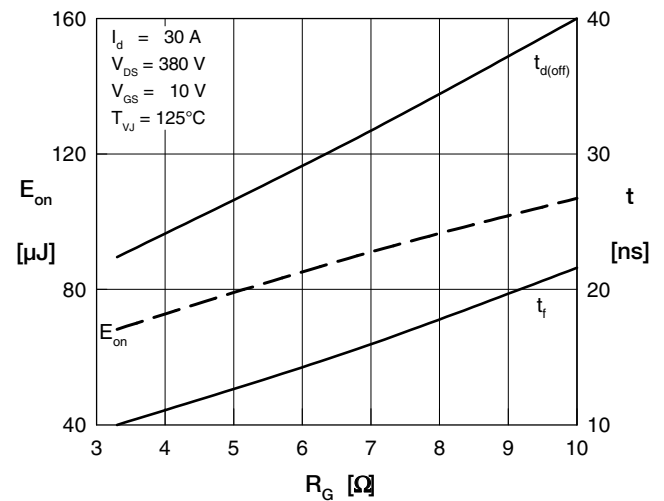


Fig. 10 Typ. turn-on energy and switching times versus gate resistor, resistive switching

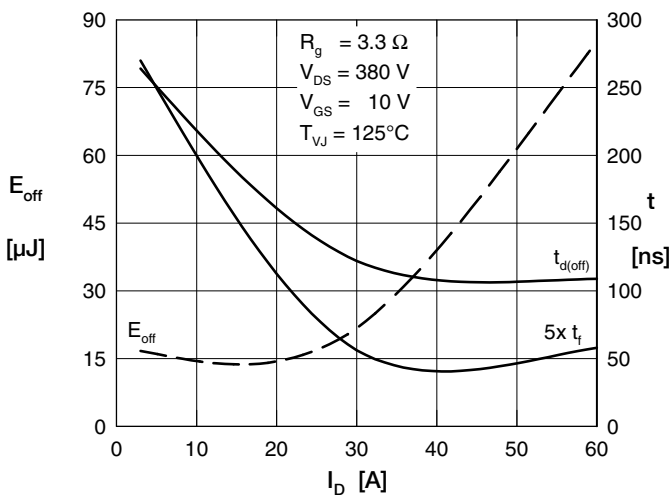


Fig.11 Typ. turn-off energy and switching times vs. collector current, resistive switching

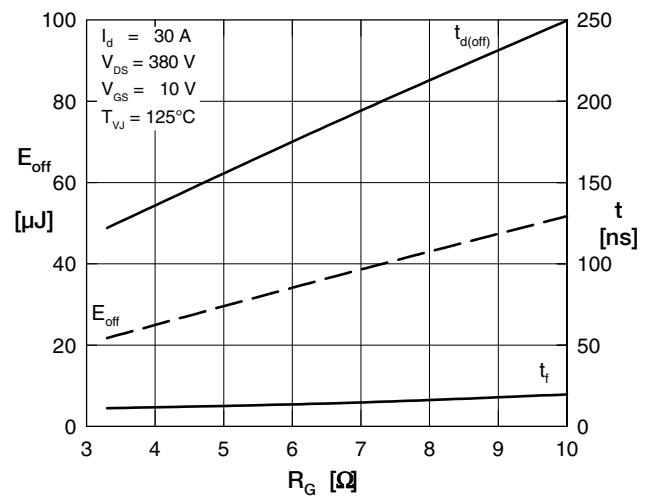


Fig. 12 Typ. turn-off energy and switching times versus gate resistor, resistive switching

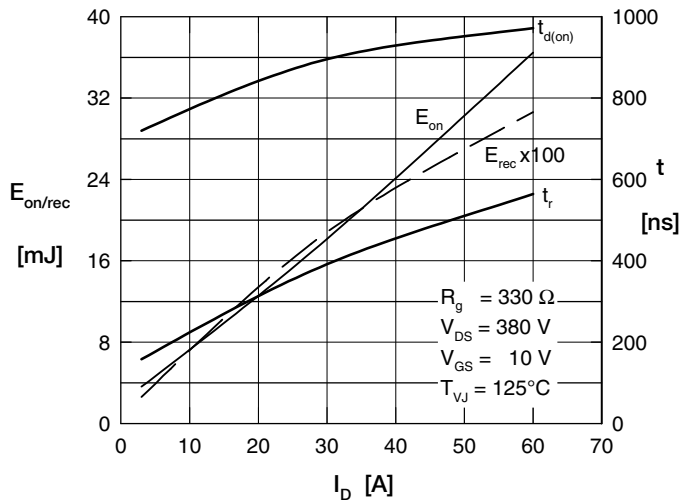


Fig. 13 Typ. turn-on energy & switching times versus collector current, inductive switching (phaseleg)

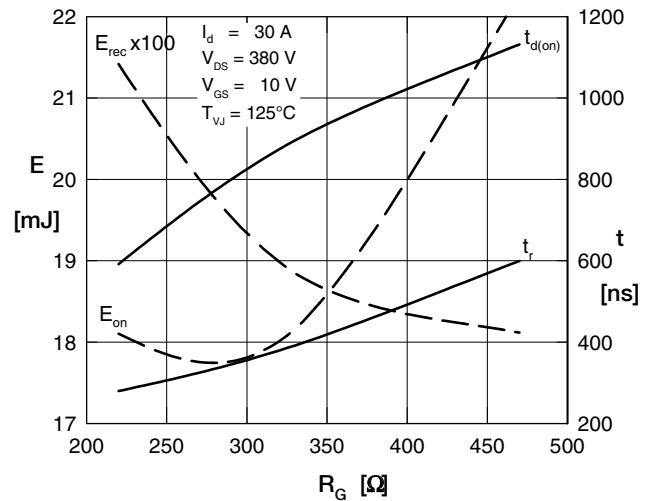


Fig. 14 Typ. turn-on energy & switching times versus gate resistor, inductive switching (phaseleg)

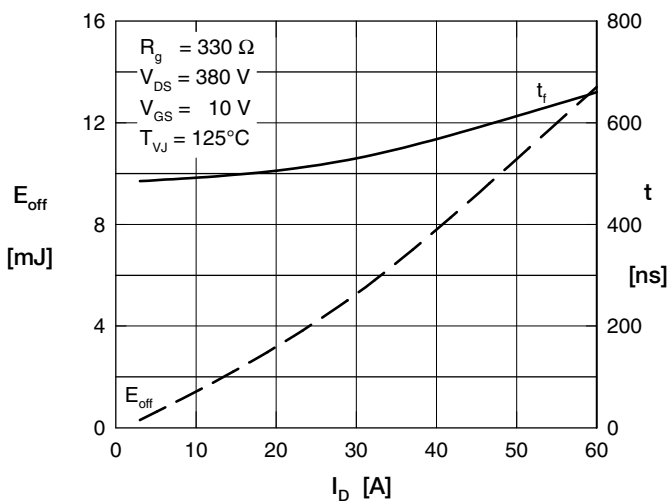


Fig. 15 Typ. turn-off energy & switching times versus collector-current, inductive switching (phaseleg)

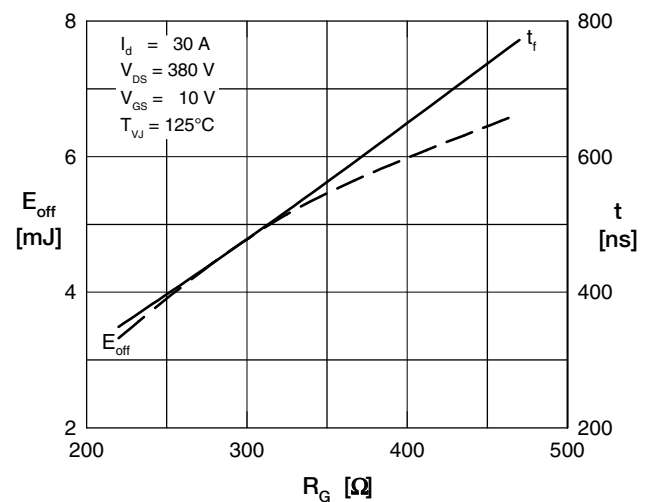


Fig. 16 Typ. turn-off energy & switching times versus gate resistor, inductive switching (phaseleg)

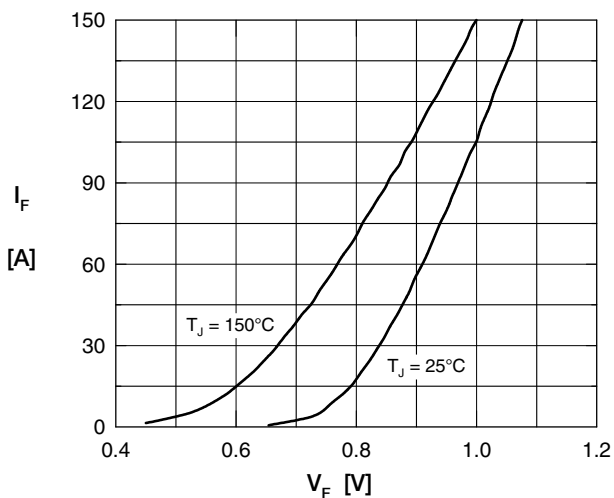


Fig. 17 Typ. forward characteristics of source drain diode D_{SD}

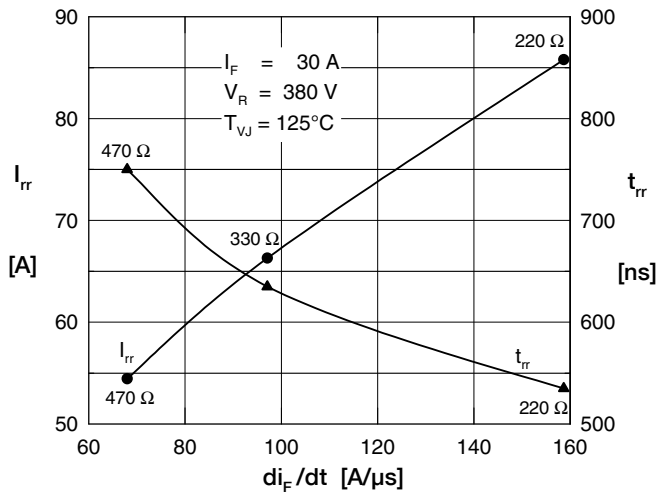


Fig. 18 Typ. reverse recovery of anti-parallel diode

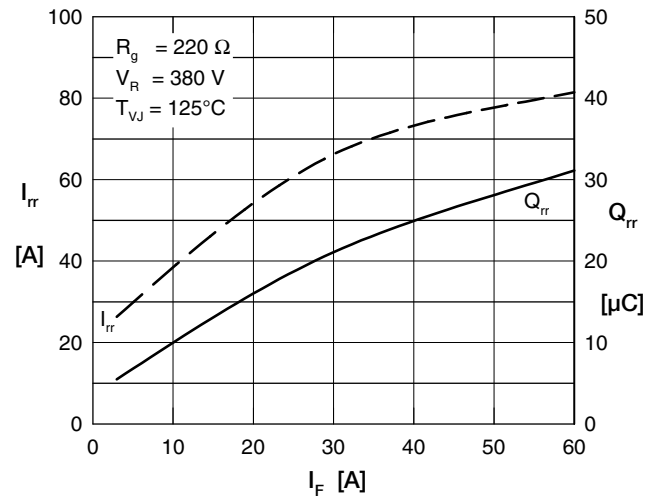


Fig. 19 Typ. reverse recovery characteristics

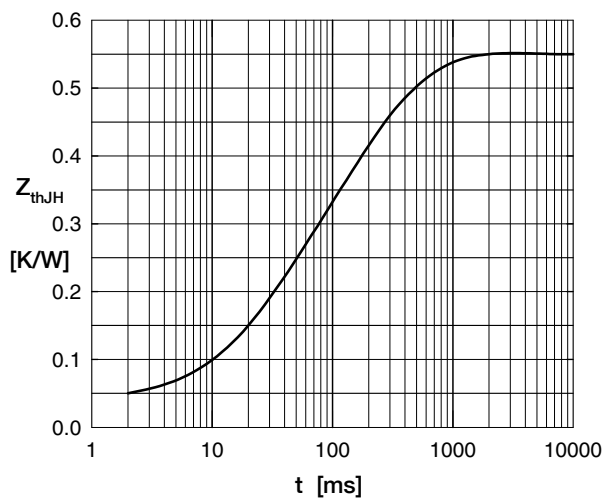


Fig. 20 Typ. transient thermal impedance of the MOSFET (IXYS test setup)