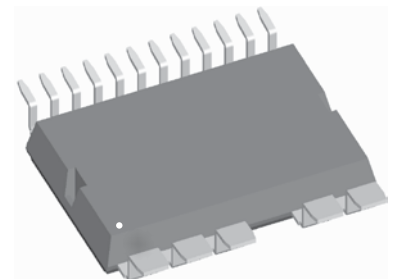


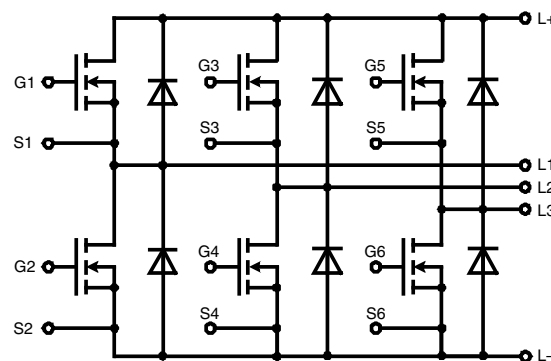
Three phase full Bridge
with Trench MOSFETs
in DCB-isolated high-current package

$V_{DSS} = 100\text{ V}$
 $I_{D25} = 120\text{ A}$
 $R_{DSon\ typ.} = 3.2\text{ m}\Omega$

Part number
MTI85W100GC



Surface Mount Device



Features / Advantages:

- MOSFETs in trench technology:
 - low R_{DSon}
 - optimized intrinsic reverse diode
- Package:
 - high level of integration
 - high current capability (300 A max.)
 - aux. terminals for MOSFET control
 - terminals for soldering or welding connections
 - isolated DCB ceramic base plate with optimized heat transfer
- Space and weight savings

Applications:

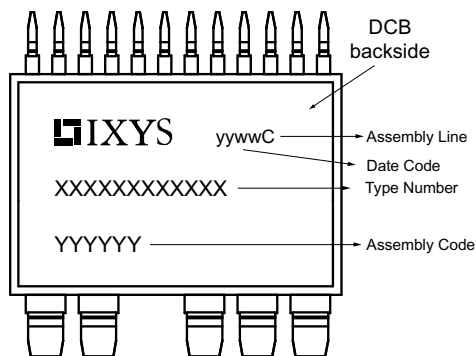
- AC drives
- in automobiles
 - electric power steering
 - starter generator
 - in industrial vehicles
 - propulsion drives
 - fork lift drives
 - in battery supplied equipment

Package: ISOPLUS-DIL®

- High level of integration
- RoHS compliant
- High current capability
- Aux. Terminals for MOSFET control
- Terminals for soldering or welding connections
- Space and weight savings

MOSFETs				Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	Unit
V_{DSS}	drain source breakdown voltage	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$			100	V
V_{GS}	gate source voltage				± 15	V
V_{GSM}	max. transient gate source voltage				± 20	V
I_{D25}	continuous drain current	$T_C = 25^{\circ}\text{C}$			120	A
I_{D90}		$T_C = 90^{\circ}\text{C}$			90	A
I_{F25}	forward current	$T_C = 25^{\circ}\text{C}$				A
I_{F90}		$T_C = 90^{\circ}\text{C}$				A
$R_{DS(on)}^{1)}$	static drain source on resistance	on-chip level at $I_D = 80\text{ A}; V_{GS} = 10\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	3.2 5.4	4	$\text{m}\Omega$ $\text{m}\Omega$
$V_{GS(th)}$	gate threshold voltage	$I_D = 150\ \mu\text{A}; V_{DS} = V_{GS}$	$T_{VJ} = 25^{\circ}\text{C}$	2.0	3.5	V
I_{DSS}	drain source leakage current	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1 100	μA μA
I_{GSS}	gate source leakage current	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			500	nA
R_G	gate resistance	on-chip level				Ω
Q_g	total gate charge	} $V_{GS} = 10\text{ V}; V_{DS} = 50\text{ V}; I_D = 80\text{ A}$		88		nC
Q_{gs}	gate source charge			30		nC
Q_{gd}	gate drain (Miller) charge			18		nC
$t_{d(on)}$	turn-on delay time	} inductive load $V_{GS} = 10\text{ V}; V_{DS} = 50\text{ V}$ $I_D = 80\text{ A}; R_G = 39\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$		90	ns
t_r	current rise time				55	ns
$t_{d(off)}$	turn-off delay time				480	ns
t_f	current fall time				40	ns
E_{on}	turn-on energy per pulse				130	μJ
E_{off}	turn-off energy per pulse				390	μJ
$E_{rec(off)}$	turn-off reverse recovery losses		10	μJ		
R_{thJC}	thermal resistance junction to case				1.2	K/W
R_{thJH}	thermal resistance junction to heatsink	with heat transfer paste (IXYS test setup)		1.5		K/W
$^{1)} V_{DS} = I_D \cdot (R_{DS(on)} + 2 \cdot R_{Pin\ to\ Chip})$						
Source-Drain Diode						
V_{SD}	source drain voltage	$I_F = 80\text{ A}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$	0.9	1.2	V
Q_{RM}	reverse recovery charge	} $V_R = 50\text{ V}; I_F = 80\text{ A}; R_G = 39\ \Omega$ $di/dt = 1500\text{ A}/\mu\text{s}$	$T_{VJ} = 125^{\circ}\text{C}$		1.3	μC
I_{RM}	max. reverse recovery current				44	A
t_{rr}	reverse recovery time				45	ns

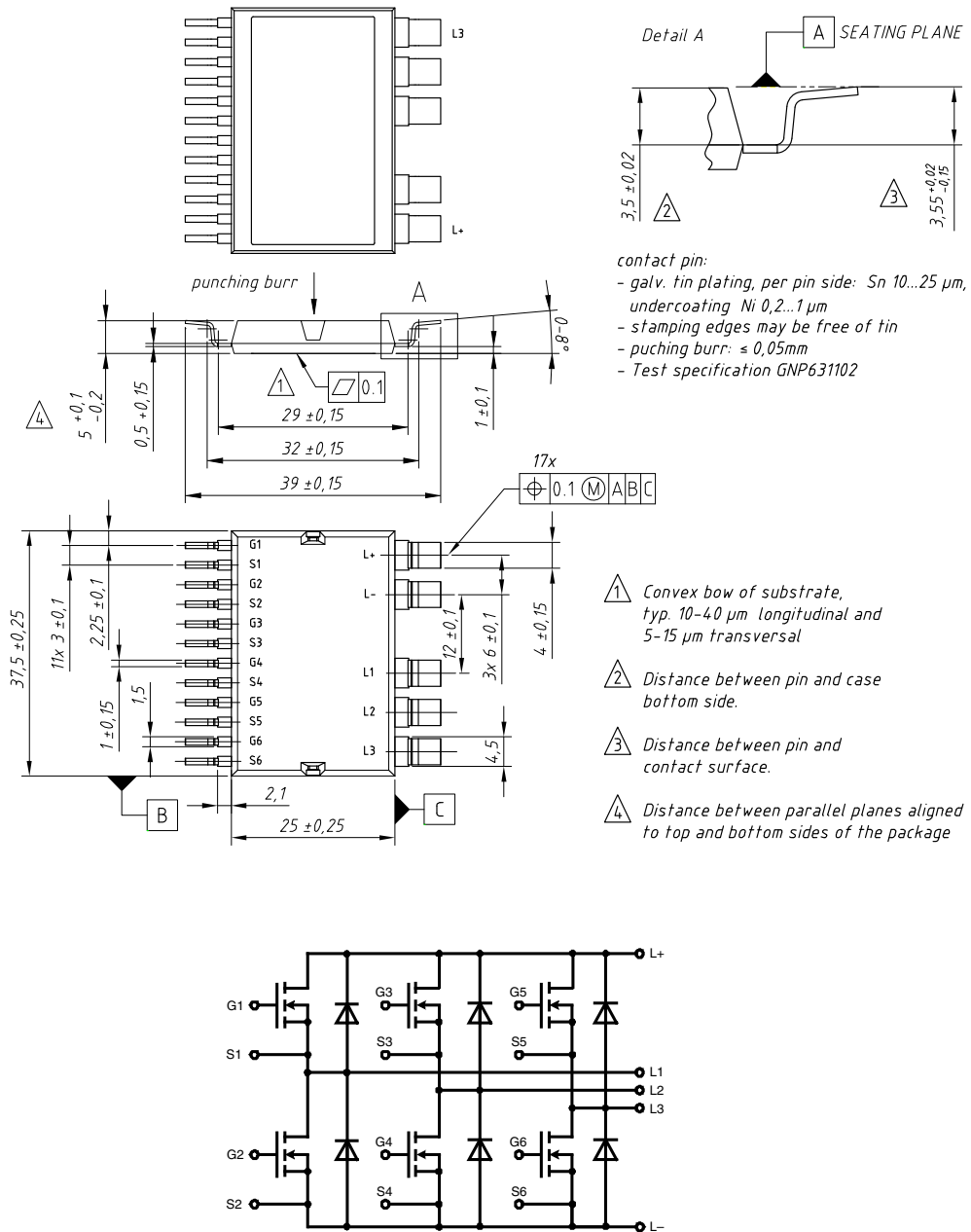
Package ISOPLUS-DIL®			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per pin in main current paths (P+, N-, L1, L2, L3) may be additionally limited by external connections 2 pins for output L1, L2, L3			300	A
T_{stg}	storage temperature		-55		125	°C
T_{VJM}	virtual junction temperature		-55		175	°C
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS, $I_{ISOL} \leq 1$ mA	1200		V
		t = 1 minute		1000		V
$R_{pin-chip}$	resistance terminal to chip	$V_{DS} = I_D \cdot (R_{DS(on)} + 2 \cdot R_{pin\ to\ chip})$		0.6		mΩ
C_p	coupling capacity	between shorted pins and back side metallization		160		pF
F_c	mounting force with clip		50		250	N
Weight				25		g


Part number

- M = Module
- T = Trench MOSFET
- I = Infineon Trench
- 145 = Current Rating [A]
- W = 6-Pack
- 100 = Reverse Voltage [V]
- GC = ISOPLUS-DIL

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MTI85W100GC	MTI85W100GC	Blister	28	513341

Outlines ISOPLUS-DIL®



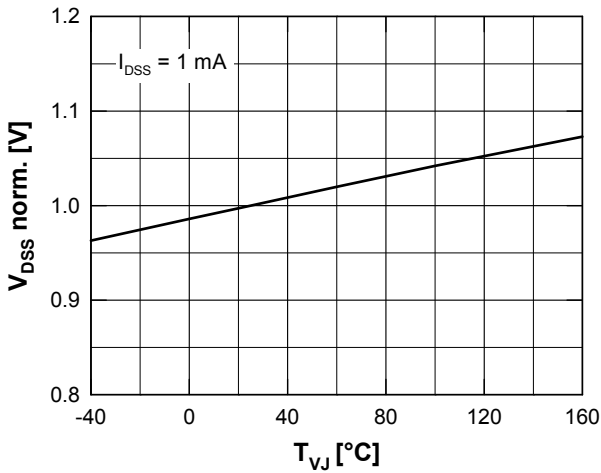


Fig. 1 Drain source breakdown voltage V_{DSS} vs. junction temperature T_{VJ}

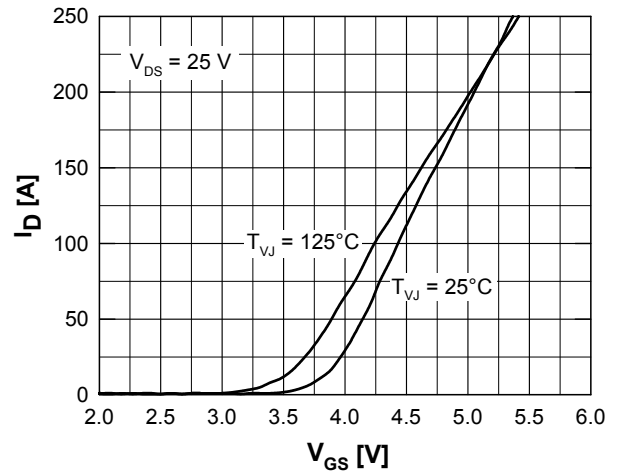


Fig. 2 Typ. transfer characteristics

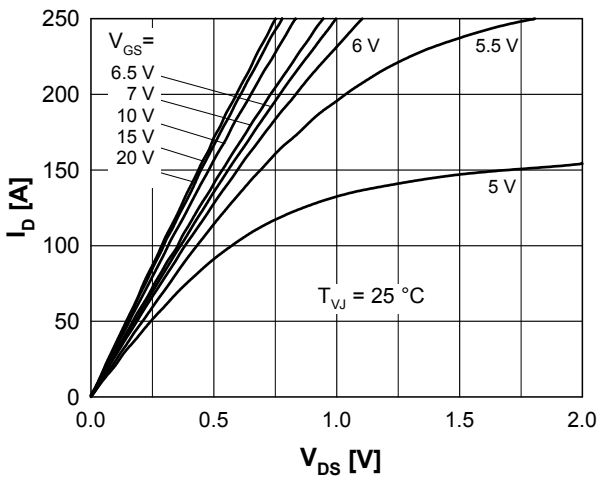


Fig. 3 Typ. output characteristics (25 °C)

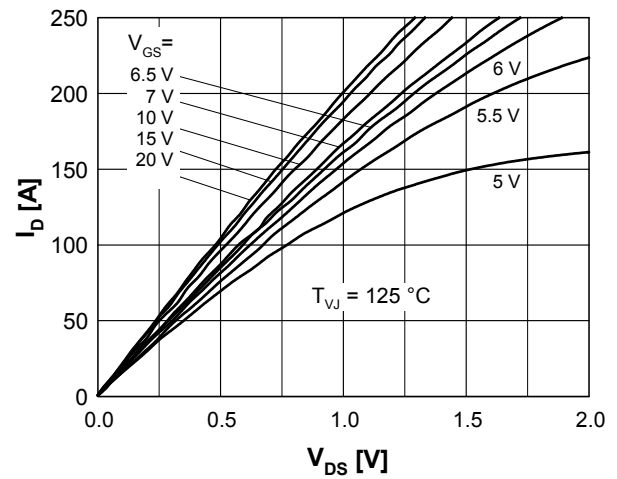


Fig. 4 Typ. output characteristics (125 °C)

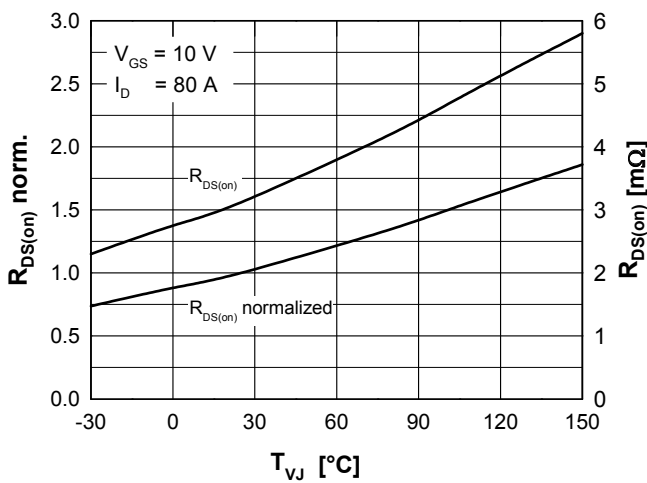


Fig. 5 Drain source on-state resistance versus junction temperature

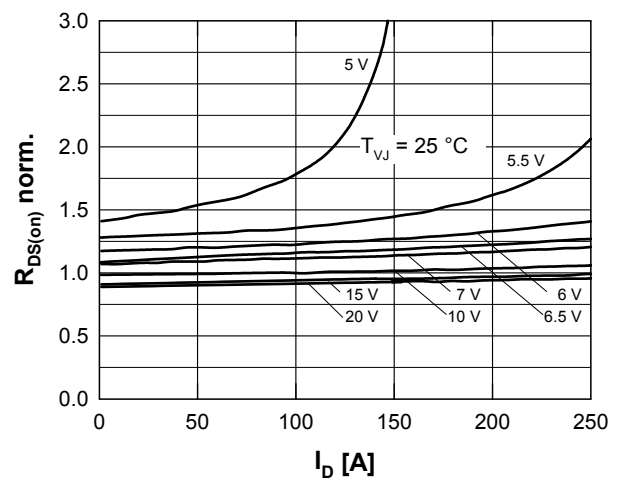


Fig. 6 Drain source on-state resistance versus I_D

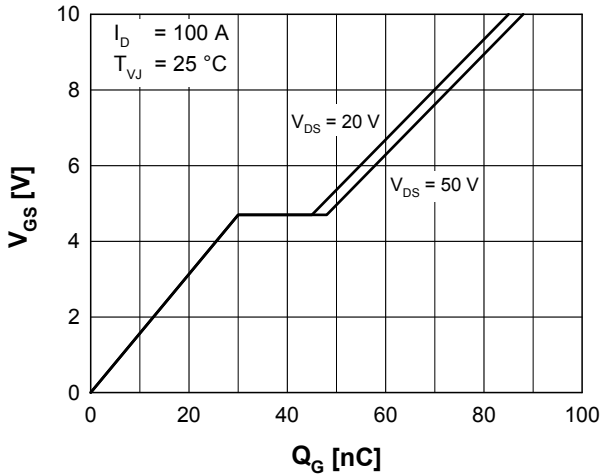


Fig. 7 Typical turn on gate charge

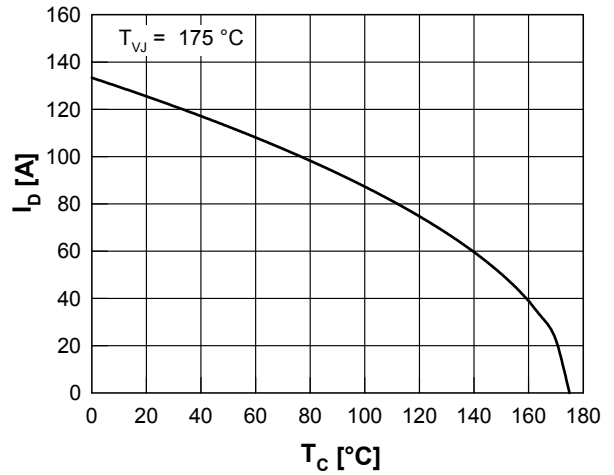


Fig. 8 Drain current I_D vs. case temperature T_C (chip capability)

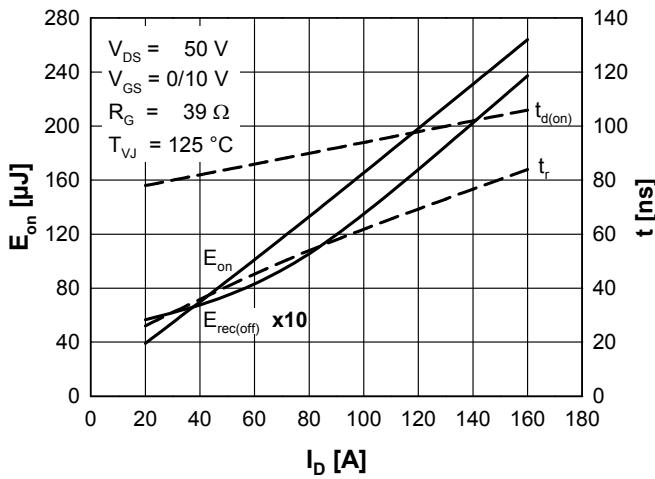


Fig. 9 Typ. turn-on energy and switching times versus drain current, inductive switching

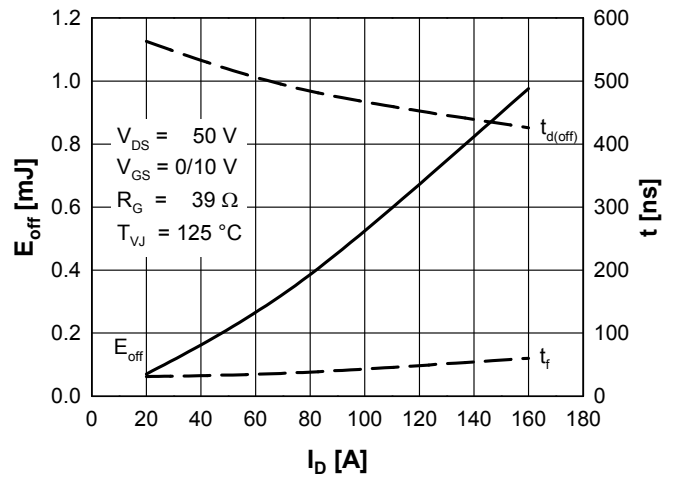


Fig. 10 Typ. turn-off energy and switching times versus drain-current, inductive switching

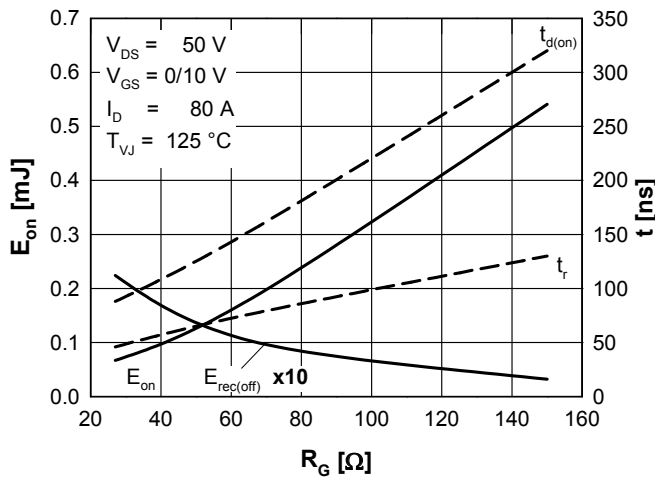


Fig. 11 Typ. turn-on energy and switching times versus gate resistor, inductive switching

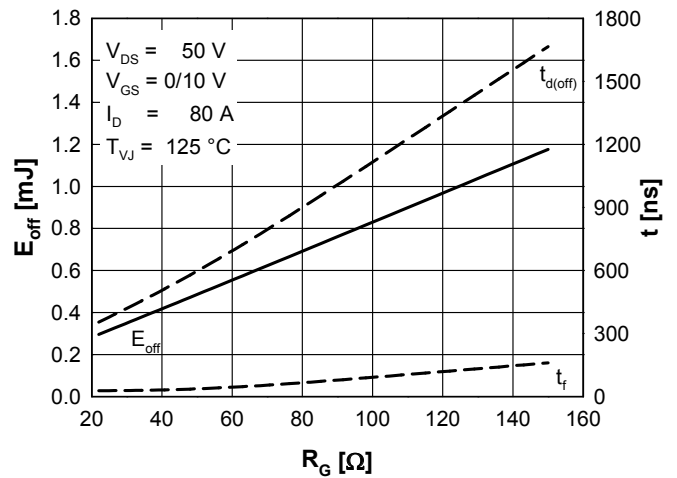


Fig. 12 Typ. turn-off energy and switching times versus gate resistor, inductive switching

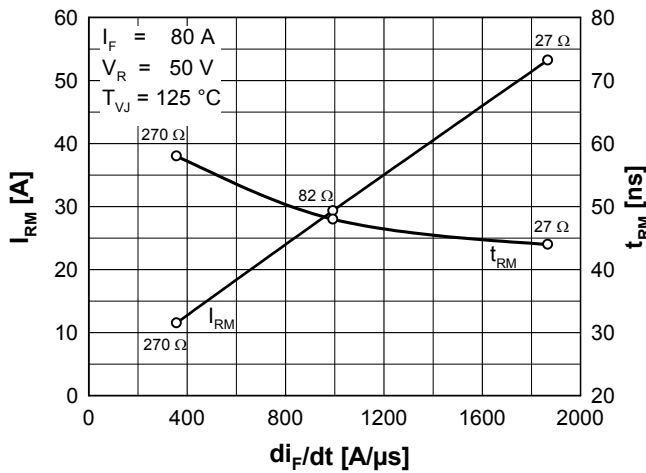


Fig. 13 Reverse recovery time t_{RM} of the body diode vs. di_F/dt

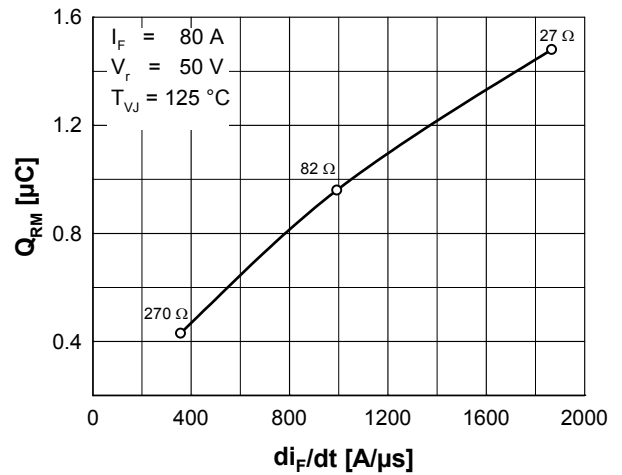


Fig. 14 Reverse recovery charge Q_{RM} of the body diode vs. di_F/dt

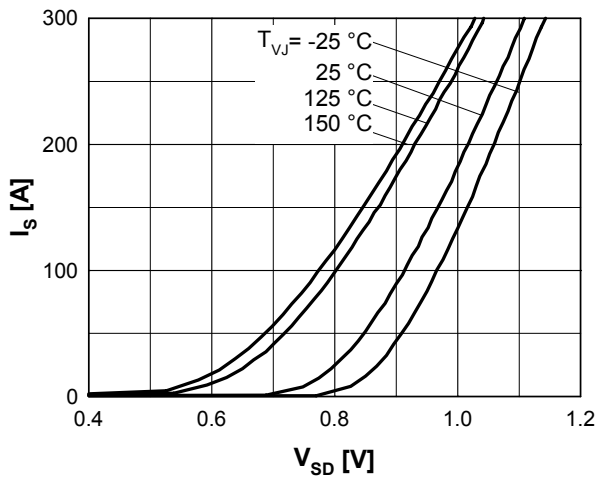


Fig.15 Source current I_S vs. source drain voltage V_{SD} (body diode)

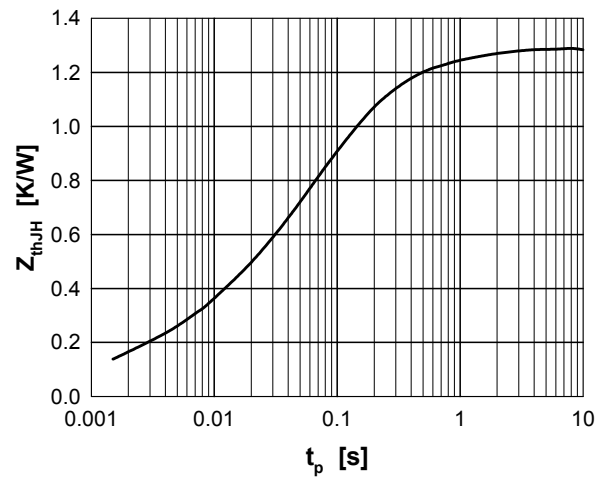


Fig. 16 Typ. thermal impedance junction to heatsink Z_{thJH} with heat transfer paste (IXYS test setup)

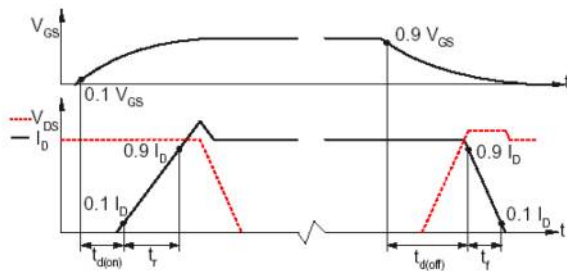


Fig. 17 Definition of switching times