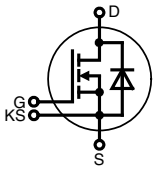
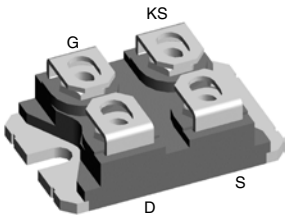
Trench Power MOSFET
Very low $R_{DS(on)}$

V_{DSS} = 100 V
I_{D25} = 350 A
$R_{DS(on)\ typ.}$ = 1.9 mΩ



SOT-227 B, miniBLOC



G = Gate, D = Drain,
S = Source, KS = Kelvin Source

MOSFET					
Symbol	**Conditions**	**Maximum Ratings**			
V_{DSS}	T_{VJ} = 25°C to 150°C			100	V
V_{GS}				± 20	V
I_{D25}	T_C = 25°C; limited by leads			350	A
I_{D90}	T_C = 90°C			265	A
$I_{D(RMS)}$	Package lead current limit			150	A
P_D	T_C = 25°C			830	W
Symbol	**Conditions**	**Characteristic Values** (T_{VJ} = 25°C, unless otherwise specified)	**min.**	**typ.**	**max.**	
R_{DSon}	on chip level: V_{GS} = 10 V I_D = 175 A; pulse test t ≤ 300 µs; duty cycle ≤ 2%	T_{VJ} = 25°C T_{VJ} = 125°C		1.9 4	2.5	mΩ mΩ
$R_{pin\ to\ chip}$	$R_{DS} = R_{DS(on)} + R_{pin\ to\ chip}$			0.8		mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}$; I_D = 3 mA		2		4	V
I_{DSS}	$V_{DS} = V_{DSS}$; V_{GS} = 0 V	T_{VJ} = 25°C T_{VJ} = 125°C			30 1.5	µA mA
I_{GSS}	V_{GS} = ± 10 V; V_{DS} = 0 V				± 300	nA
C_{iss} C_{oss} C_{rss}	V_{GS} = 0 V; V_{DS} = 25 V; f = 1 MHz			27 3 2		nF nF nF
Q_g Q_{gs} Q_{gd}	V_{GS} = 10 V; V_{DS} = 80 V; I_D = 300 A			640 135 275		nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off} $E_{rec(off)}$	V_{GS} = 10 V; V_{DS} = 50 V; I_D = 250 A; R_G = 1.9 Ω (external)	T_{VJ} = 125°C		115 175 650 150 1.0 3.1 0.32		ns ns ns ns mJ mJ mJ
R_{thJC}					0.18	K/W
R_{thCH}	with heat transfer paste			0.06		K/W

Features
- trench MOSFET
- very low on state resistance R_{DSon}
- fast switching
- fast body diode
- industry standard outline
- isolated package
- high reliability

Applications
- automotive
- converters for fuel cells
- AC drives
- choppers to replace series dropping resistors used for motors, heaters etc.
- DC-DC converters
- electronic switches
- replacing relays and fuses
- power supplies
- solar inverters
- battery supplied systems
- choppers or inverters for motor control in hand tools
- battery chargers

Advantages
- Easy to mount
- Space savings
- High power density

Source-Drain Diode

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			300	A
I_{SM}	Repetitive, pulse width limited by T_{JM}			550	A
V_{SD}	I_F = 250 A; V_{GS} = 0 V Pulse test, t ≤ 300 µs, duty cycle ≤ 2%		1.1	1.3	V
t_{rr}	I_F = 350 A; -di$_F$/dt = 600 A/µs; V_R = 50 V		120		ns
I_{RM}			35		A
Q_{RR}			2.8		µC

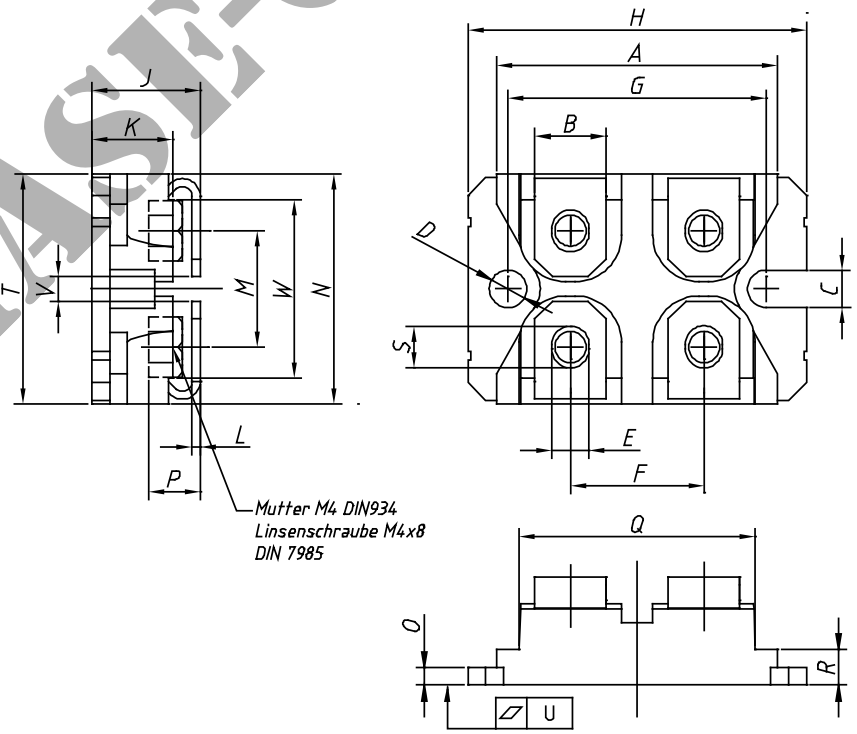
Component

Symbol	Conditions		Maximum Ratings	
T_{VJ}	operating		-55...+150	°C
T_{stg}	storage		-55...+150	°C
V_{ISOL}	50/60 Hz, RMS, I_{ISOL} ≤ 1 mA	t = 1 min	2500	V~
		t = 1 s	3000	V~
M_d	mounting torque		1.5	Nm
	terminal connection torque		1.5	Nm

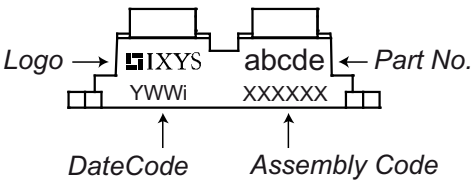
Symbol	Conditions	Characteristic Values min.	typ.	max.	
Weight			30		g

SOT-227 B, miniBLOC

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	31.5	31.88	1.24	1.255
B	7.8	8.2	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.3	1.186	1.193
H	37.8	38.23	1.489	1.505
J	11.68	12.22	0.46	0.481
K	8.92	9.6	0.351	0.378
L	0.76	0.84	0.03	0.033
M	12.6	12.85	0.496	0.506
N	25.15	25.42	0.99	1.001
O	1.98	2.13	0.78	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.9	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.3	4.57	0.13	0.18
W	19.81	21.08	0.78	0.83



Product Marking



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty.	Code Key
Standard	IXUN350N10	IXUN350N10	Tube	10	501384

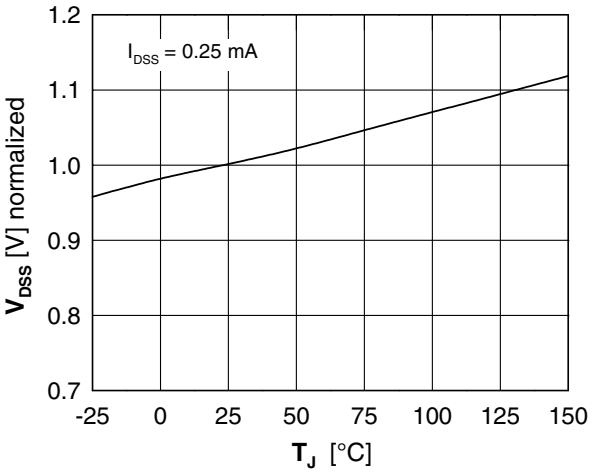


Fig. 1 Drain source breakdown voltage V_{DSS} vs. junction temperature T_J

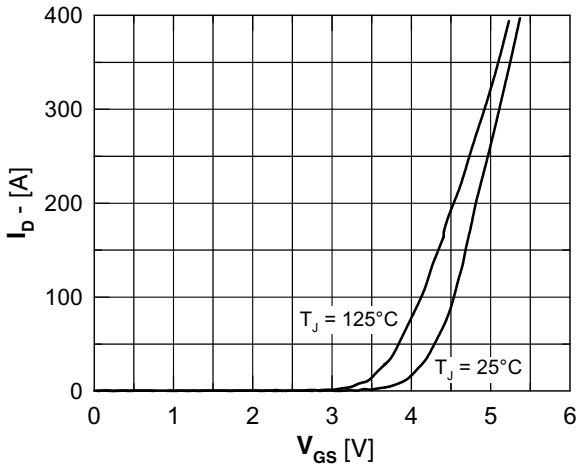


Fig. 2 Typical transfer characteristic

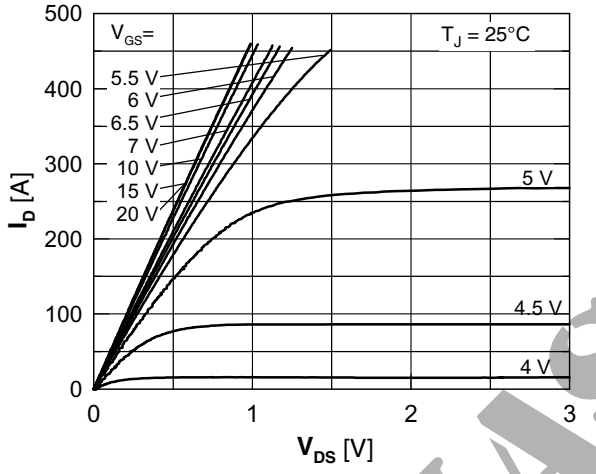


Fig. 3 Typical output characteristic

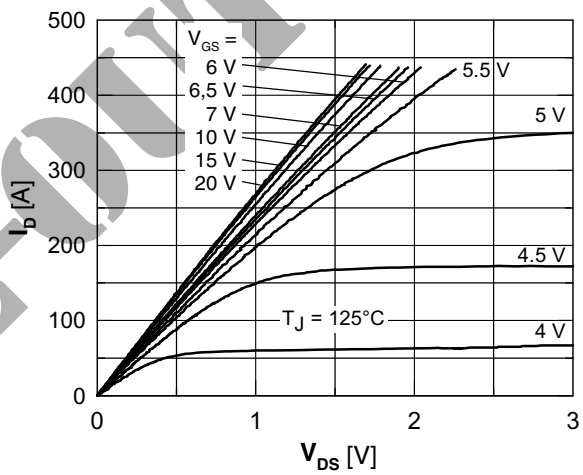


Fig. 4 Typical output characteristic

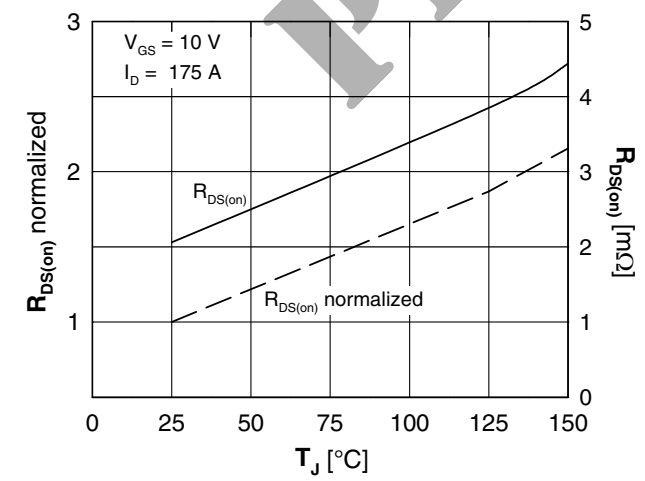


Fig. 5 Drain source on-state resistance $R_{DS(on)}$ versus junction temperature T_J

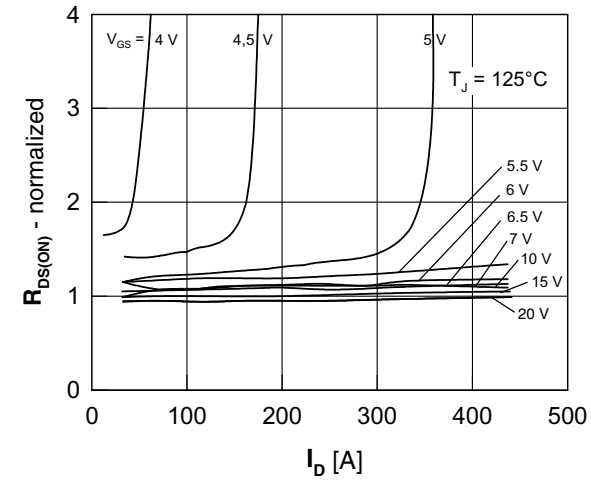


Fig. 6 Drain source on-state resistance $R_{DS(on)}$ versus I_D

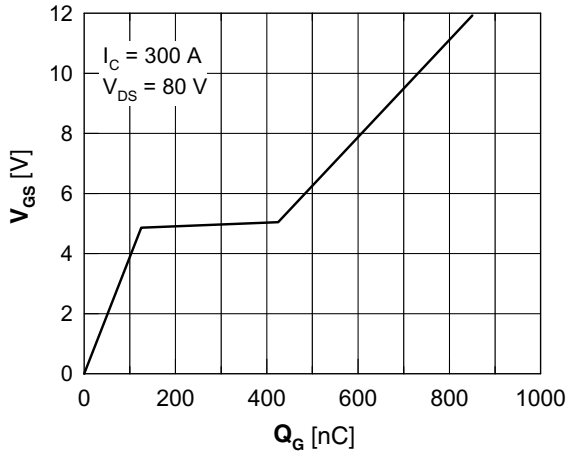


Fig.7 Gate charge characteristic

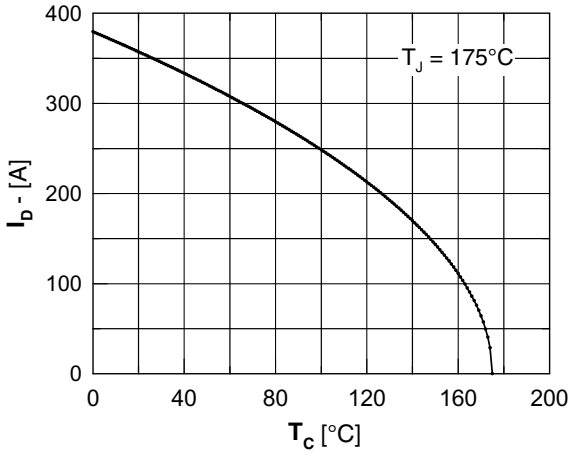


Fig. 8 Drain current I_D vs. case temperature T_C

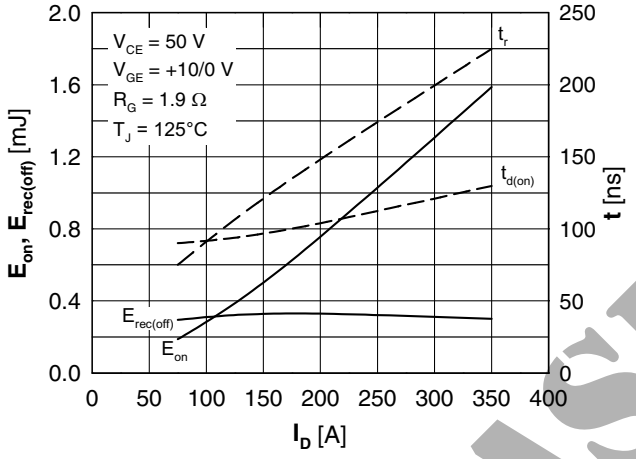


Fig. 9 Typ. turn-on energy & switching times vs. collector current, inductive switching

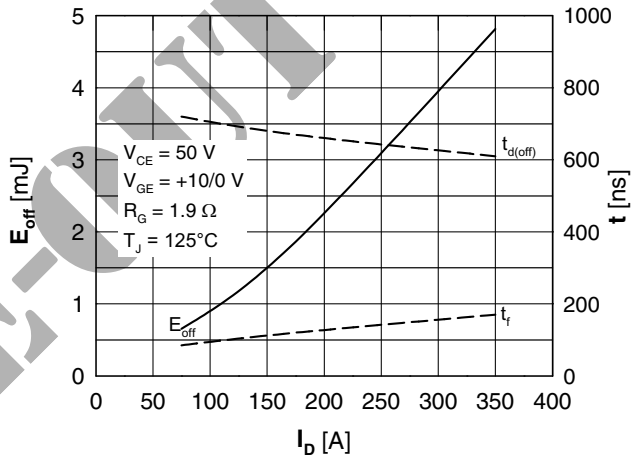


Fig. 10 Typ. turn-off energy & switching times vs. collector current, inductive switching

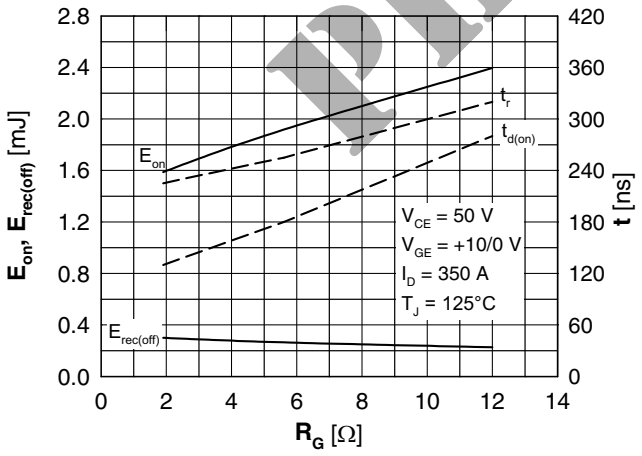


Fig. 11 Typ. turn-on energy & switching times vs. gate resistor, inductive switching

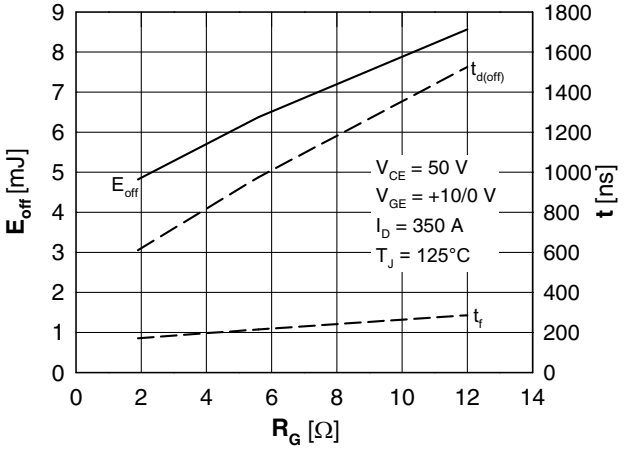


Fig. 12 Typ. turn-off energy & switching times vs. gate resistor, inductive switching

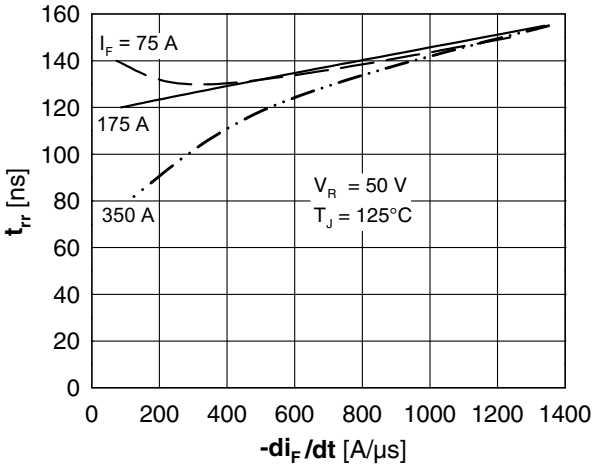


Fig. 13 Reverse recovery time t_{rr} of the body diode vs. di/dt

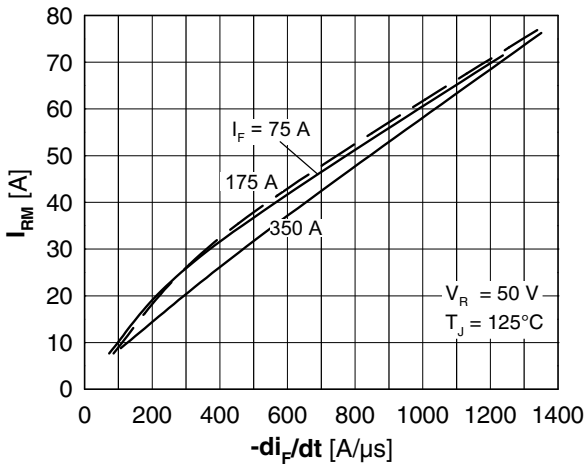


Fig. 14 Reverse recovery current I_{RM} of the body diode vs. di/dt

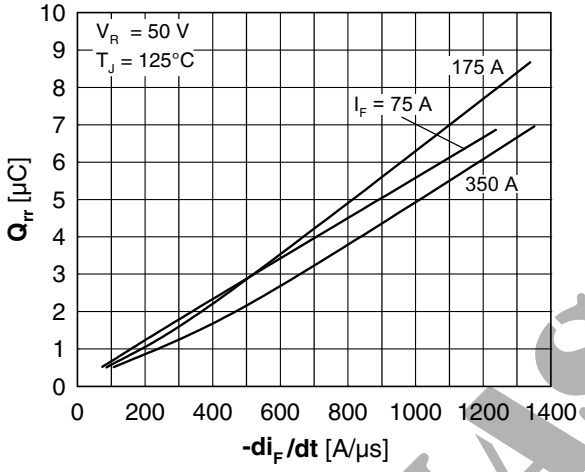


Fig. 15 Reverse recovery charge Q_{rr} of the body diode vs. di/dt

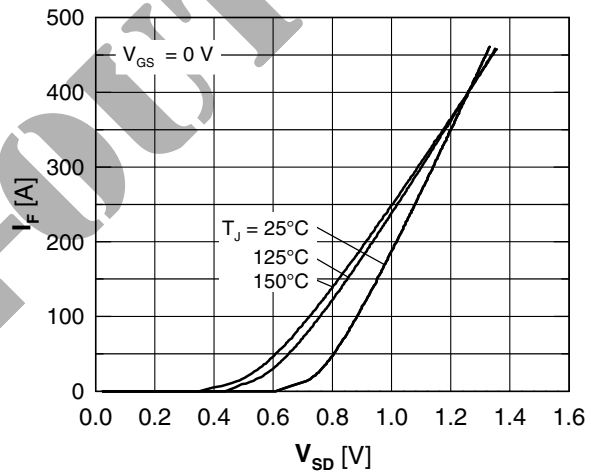


Fig. 16 Source drain diode current I_F vs. source drain voltage V_{SD} (body diode)

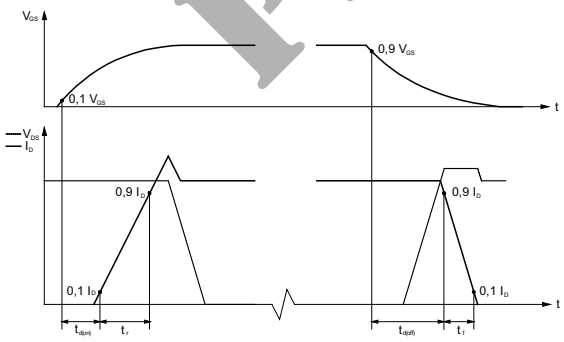


Fig. 17 Definition of switching times

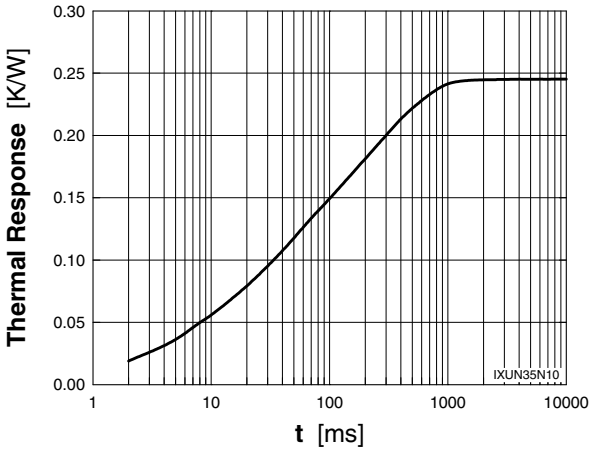


Fig. 18 Typ. thermal impedance junction to heatsink Z_{thJH} with heat transfer paste