



E502650

Features

- Low $V_{CE(sat)}$ With Trench Technology
- $V_{CE(sat)}$ With Positive Temperature Coefficient
- High Short Circuit Capability(10us)
- Including Ultra Fast & Soft Recovery Anti-parallel FWD
- Low Inductance
- Maximum Junction Temperature 175℃
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note 1)("P" Suffix Designates RoHS Compliant. See Ordering Information)

Applications

- Inverter For Motor Drive
- AC And DC Servo Drive Amplifier
- UPS(Uninterruptible Power Supplies)
- Soft Switching Welding Machine

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage@ $V_{GE}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	V_{CES}	1200	V
Continuous Collector Current @ $T_C=100^{\circ}C$	I_C	150	A
Repetitive Peak Collector Current @ $t_p=1ms$	I_{CRM}	300	A
Gate-Emitter Voltage@ $T_{vj}=25^{\circ}C$	V_{GE}	± 20	V
Isolation Voltage @ $f=50Hz, t=1min$	V_{isol}	2500(Min)	V
Weight of Module	G	150	g
Module Electrodes Torque:M5	M_t	2.5~5	N*m
Module-to-Sink Torque :M6	M_s	3~5	N*m
Total Power Dissipation (IGBT-Inverter)	$T_C=25^{\circ}C$	P_{tot}	W
	$T_{vjmax}=175^{\circ}C$		

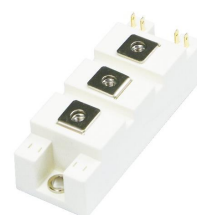
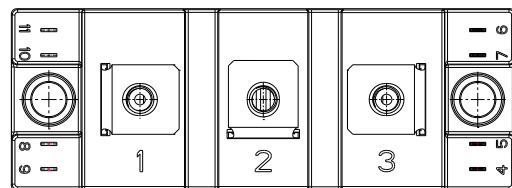
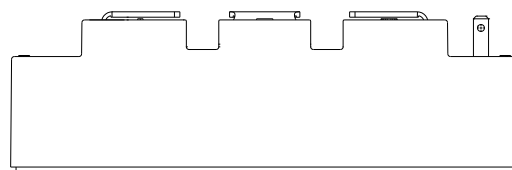
Note:

1. High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.

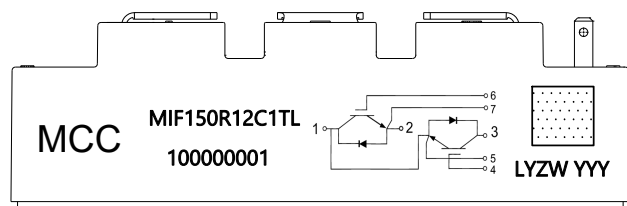
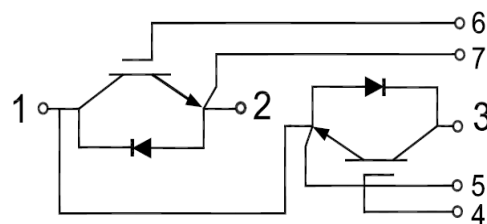
IGBT Modules

1200V 150A

C1



Circuit Diagram



Marking Code Contents:

Logo: MCC

Product Number:MIF150R12C1TL

Trace Code: 10 Digits

Circuit Diagram

2D Code format: Data Matrix

Electrical Characteristics of IGBT @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate-emitter Threshold Voltage	$V_{GE(th)}$	$I_C=5mA, V_{CE}=V_{GE}, T_{vj}=25^{\circ}C$	5.0	5.7	6.5	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=150A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.85	2.20	V
		$I_C=150A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.20		
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1MHz, T_{vj}=25^{\circ}C$		9.8		nF
Reverse Transfer Capacitance	C_{res}			0.48		
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA
Turn-On Delay Time	$td_{(on)}$	$V_{CE}=600V, I_C=150A,$ $V_{GE}=\pm 15V, R_G=3.3\Omega,$ $T_{vj}=25^{\circ}C$		111		ns
Rise Time	t_r			72		
Turn-Off Delay Time	$td_{(off)}$			280		
Fall Time	t_f			228		
Turn-On Energy	E_{on}	$V_{CE}=600V, I_C=150A,$ $V_{GE}=\pm 15V, R_G=3.3\Omega,$ $T_{vj}=125^{\circ}C$		13.17		mJ
Turn-Off Energy	E_{off}			12.71		
Turn-On Delay Time	$td_{(on)}$			165		ns
Rise Time	t_r			76		
Turn-Off Delay Time	$td_{(off)}$			330		
Fall Time	t_f			244		
Turn-On Energy	E_{on}	$V_{CE}=600V, I_C=150A,$ $V_{GE}=\pm 15V, R_G=3.3\Omega,$ $T_{vj}=125^{\circ}C$		19.7		mJ
Turn-Off Energy	E_{off}			16.5		
SC Data	I_{sc}	$t_p \leq 10\mu s, V_{GE}=15V,$ $T_{vj}=150^{\circ}C, V_{cc}=600V,$ $V_{CEM} \leq 1200V$		500		A

Electrical Characteristics of DIODE @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_{vj}=25^{\circ}\text{C}$	1200	V
Continuous DC Forward Current	I_F		150	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	300	A

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Voltage	V_F	$I_F=150\text{A}, T_{vj}=25^{\circ}\text{C}$		2.0		V
		$I_F=150\text{A}, T_{vj}=125^{\circ}\text{C}$		1.8		
Recovered Charge	Q_{rr}	$I_F=150\text{A}$ $V_R=600\text{V}$		9.2		μC
Peak Reverse Recovery Current	I_{rr}	$-diF/dt=1800\text{A/us}$		143		A
Reverse Recovery Energy	E_{rec}	$T_{vj}=25^{\circ}\text{C}$		3.9		mJ
Recovered Charge	Q_{rr}	$I_F=150\text{A}$ $V_R=600\text{V}$		16.1		μC
Peak Reverse Recovery Current	I_{rr}	$-diF/dt=1800\text{A/us}$		178		A
Reverse Recovery Energy	E_{rec}	$T_{vj}=125^{\circ}\text{C}$		5.3		mJ

Module Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Isolation voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{vj\text{ op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	per IGBT			0.155	K/W
		per Diode			0.29	
Thermal Resistance Case-to Sink	$R_{\theta CS}$	Conductive grease applied		0.05		K/W

Curve Characteristics

Fig1.IGBT Output Characteristics

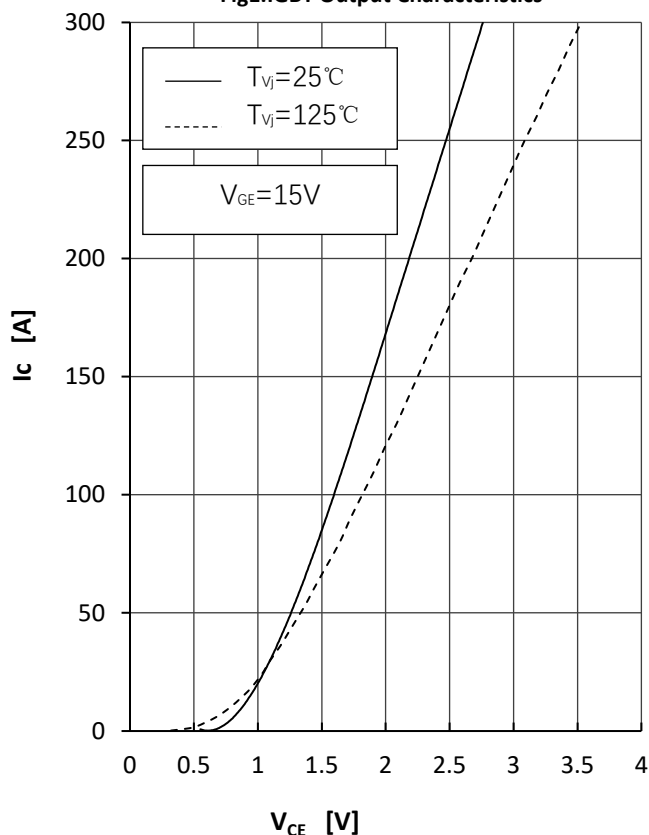


Fig2.IGBT Transfer Characteristics

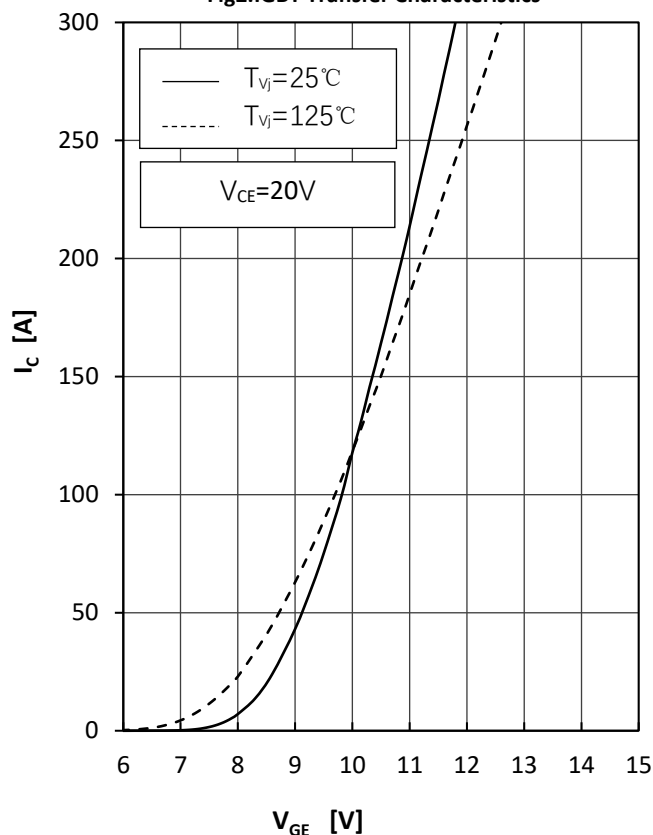


Fig3.IGBT Switching Loss vs. I_c

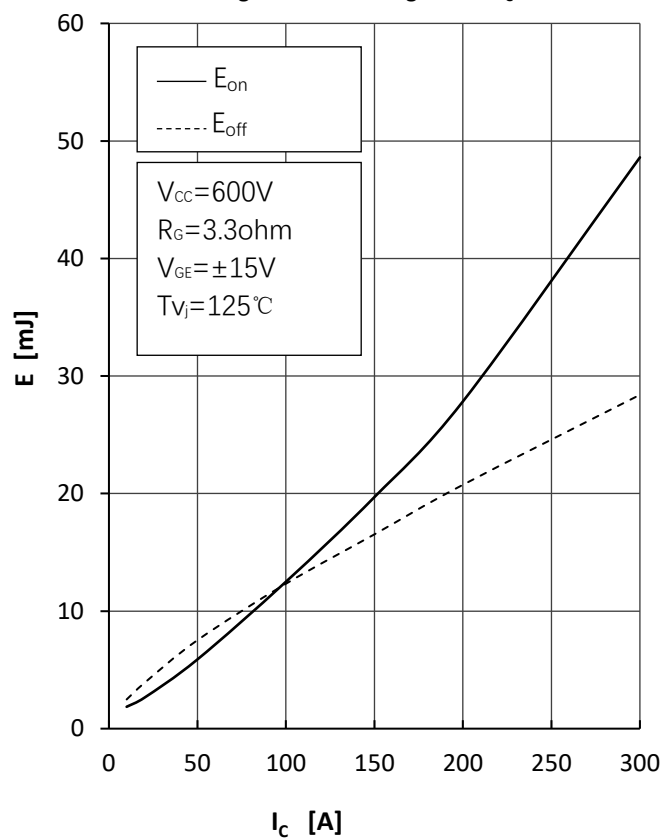
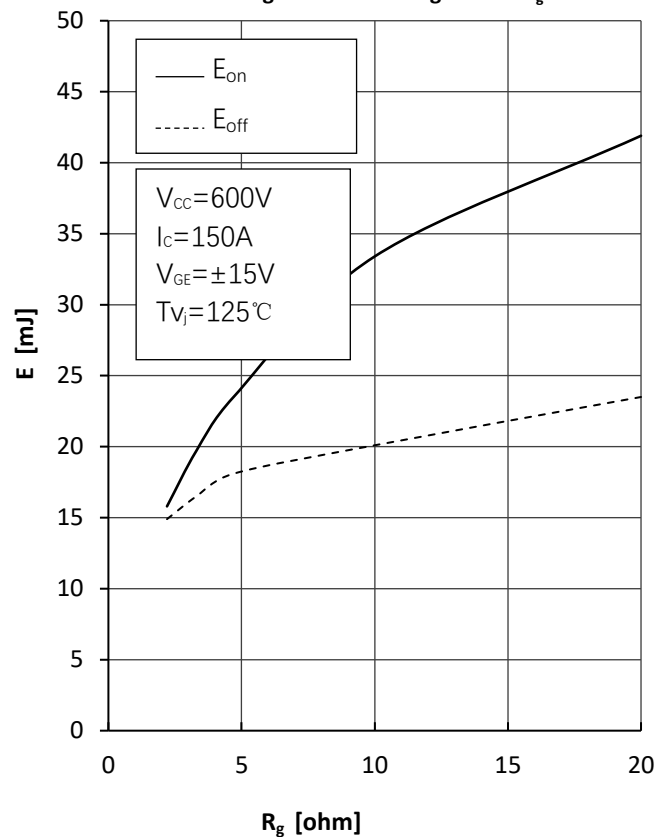


Fig4.IGBT Switching Loss vs. R_g



Curve Characteristics

Fig5. RBSOA

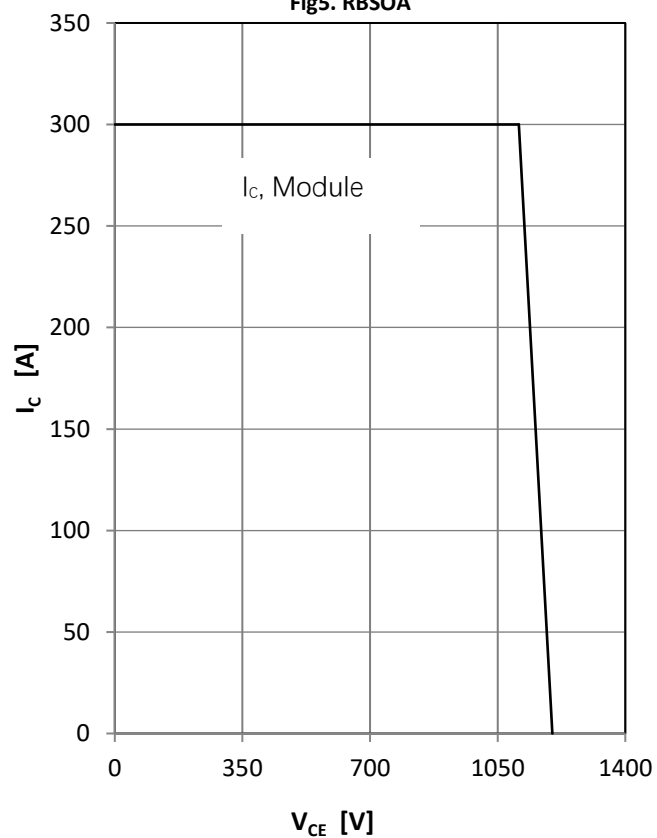


Fig 6. IGBT Transient Thermal Impedance

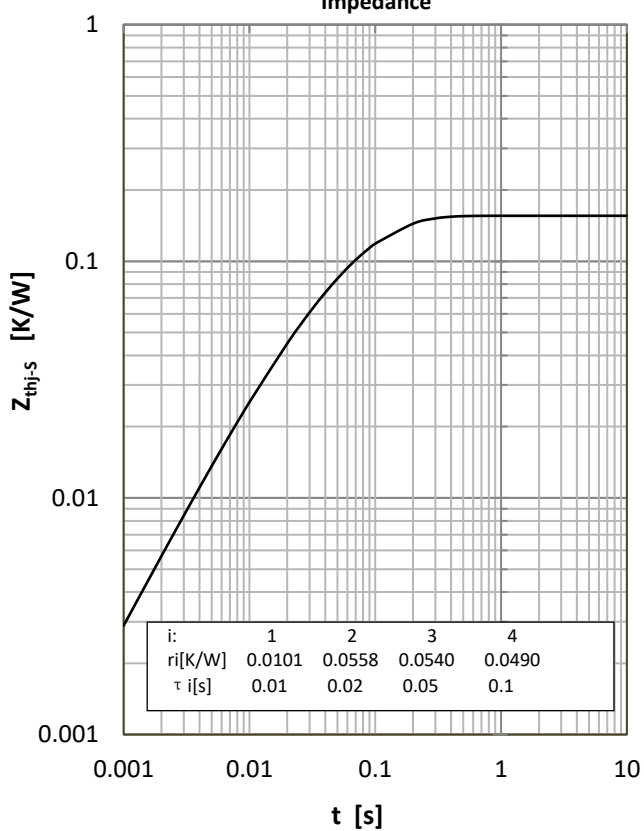


Fig7.Diode Foward Characteristics

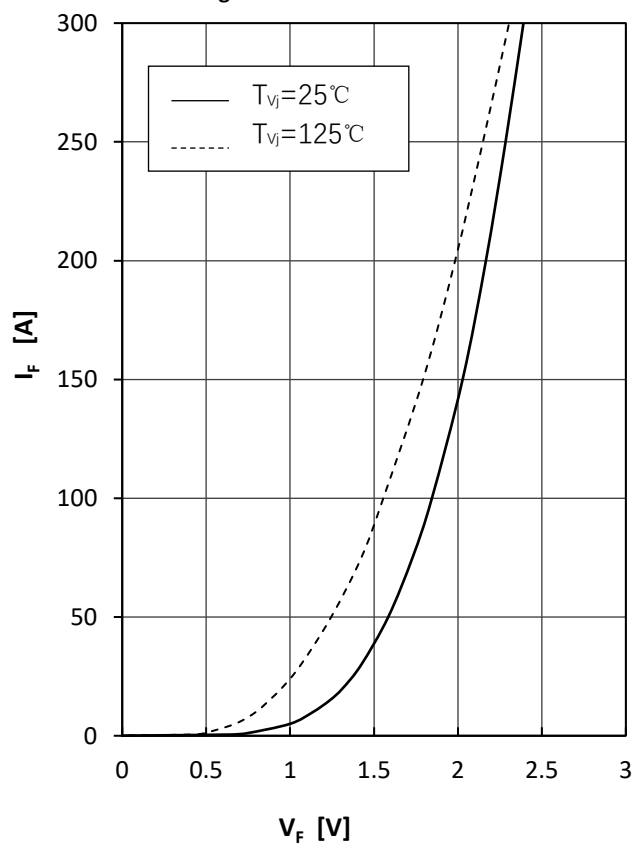
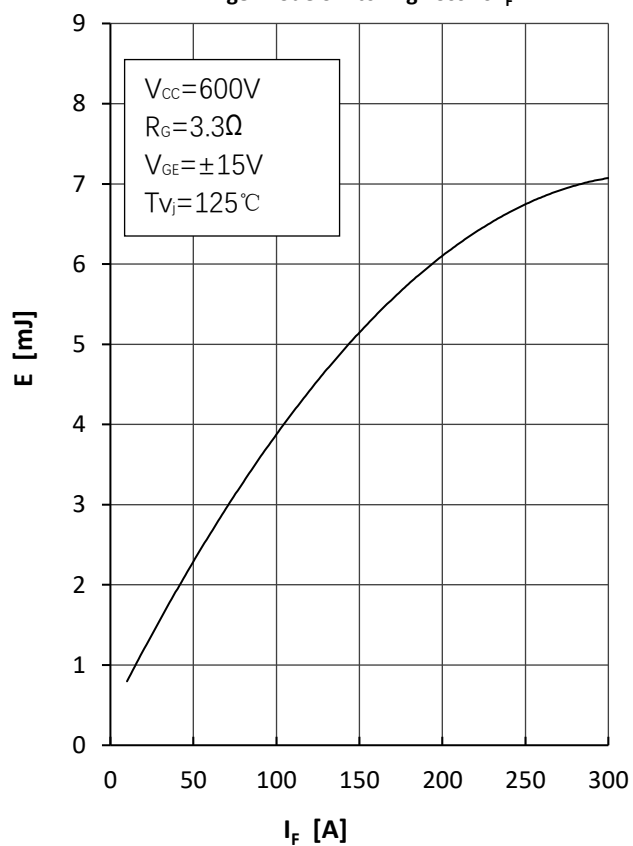


Fig8.Diode Switching Loss vs. I_F



Curve Characteristics

Fig9.Diode Switching Loss(Erec) vs.R_g

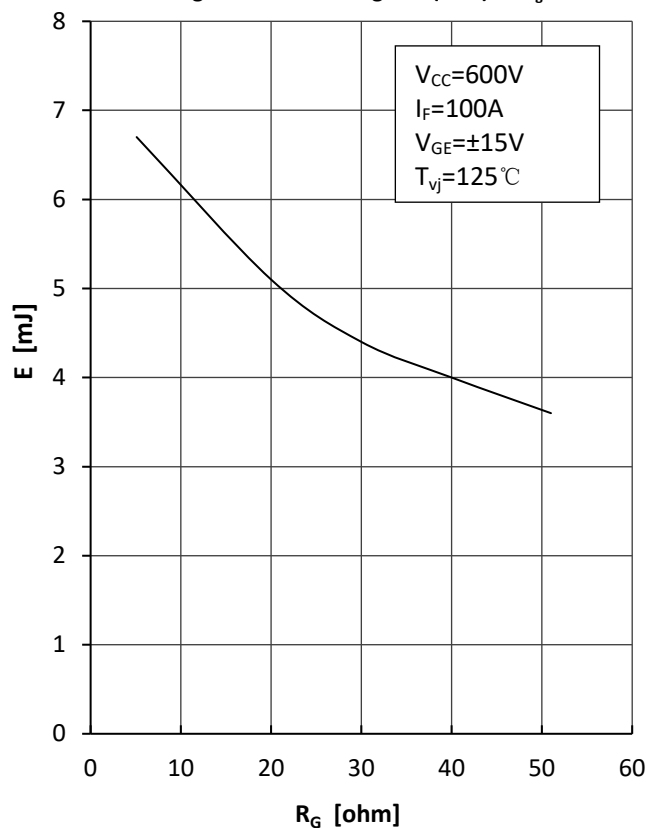
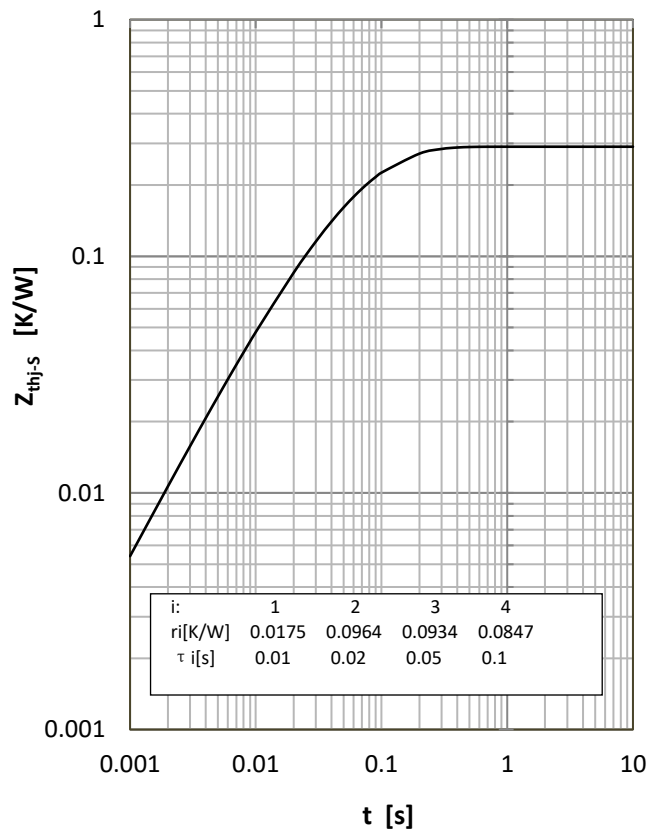
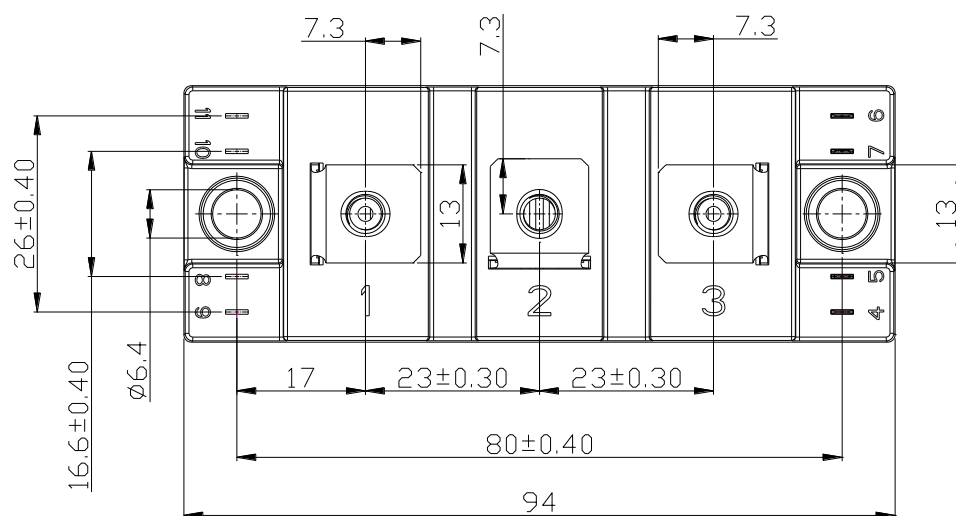
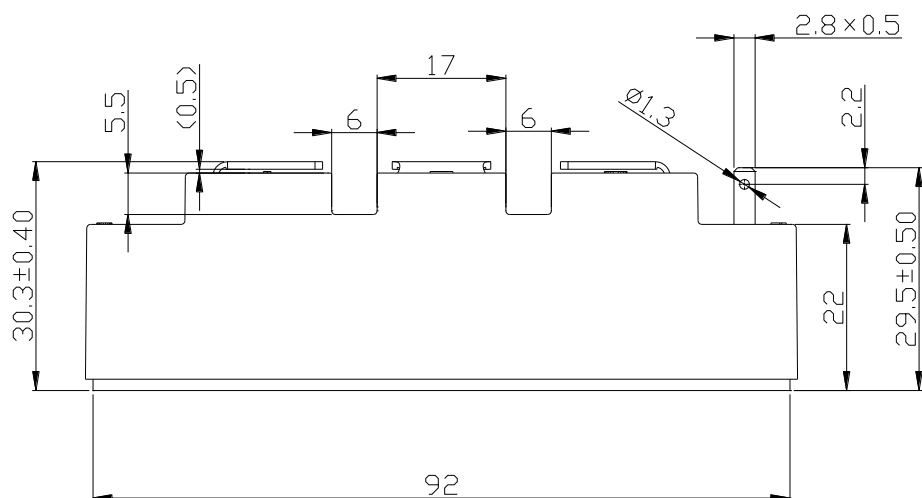


Fig 10. Diode Transient Thermal Impedance



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Dimensions in mm



Ordering Information

Device	Packing
Part Number-BP	Bulk: 10pcs/Box ; 50pcs/Ctn

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