

Features:

- Cu baseplate
- Enhanced Al₂O₃ substrates
- High thermal cycling capability
- Low VCE(sat) Device

Typical Applications:

- Motor drives
- High power converters
- Wind turbines
- High reliability inverter

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE			UNIT
			Min	Type	Max	
V _{CES}	Collector-Emitter voltage	T _j =25°C			1700	V
V _{GES}	Gate-Emitter voltage	T _j =25°C			±20	V
I _C	Collector current	T _c =100°C			1400	A
I _{CM}	Repetitive peak collector current	t _p =1ms			2800	A
P _{max}	Max. transistor power dissipation	T _{vj} =175°C, T _C =25 °C			8.98	KW
T _j	Junction temperature	/			150	°C
T _{stg}	Storage temperature	/	-40		150	°C
V _{iso}	Isolation between terminal and copper base	T _j =25°C, AC: 1minute	4000			V
I _{CES}	Zero gate voltage collector current	T _j =25°C, V _{CE} =1700V, V _{GE} =0V			1	mA
I _{GES}	Gate-Emitter leakage current	T _j =25°C, V _{CE} =0V, V _{GE} =±20V			0.5	µA
V _{GE(th)}	Gate-Emitter threshold voltage	T _j =25°C, V _{CE} =20V, I _C =60mA	5.5	6.1	6.7	V
V _{CE(sat)}	Collector-Emitter saturation voltage	T _j =25°C, V _{GE} =15V, I _C =1400A		1.75	2.15	V
		T _j =125°C, V _{GE} =15V, I _C =1400A		2.00		V
		T _j =150°C, V _{GE} =15V, I _C =1400A		2.10		V
Q _g	Gate Charge	V _{GE} =±15V		15.6		µC
C _{ies}	Input capacitance	T _j =25°C, V _{CE} =25V, V _{GE} =0V, f=100kHz		215		nF
C _{res}	Reverse transfer capacitance			1.2		nF
t _{(d)on}	Turn-on time	T _j =150°C, V _{CE} =900V, I _C =1400A, V _{GE} =±15V, R _g =0.5Ω, Inductive load		700		ns
t _r				150		ns
t _{(d)off}	Turn-off time	T _j =150°C, V _{CE} =900V, I _C =1400A, V _{GE} =±15V, R _g =0.68Ω, Inductive load		1500		ns
t _f				725		ns
E _{ON}	Turn-on energy loss	T _j =150°C, V _{CE} =900V, I _C =1400A, V _{GE} =±15V, R _g =0.5Ω, Inductive load		220		mJ
E _{off}	Turn-off energy loss	T _j =150°C, V _{CE} =900V, I _C =1400A, V _{GE} =±15V, R _g =0.68Ω, Inductive load		670		mJ
I _{sc}	Short circuit current	V _{GE} =15V, V _{CC} =1000V, T _j =150°C		6000		A
t _{sc}	Short circuit withstand time	T _j =150°C, V _{CC} =720V, V _{GE} =±15V, R _g =7.5Ω	10			µs

V _F	Forward on voltage	T _J =25°C ,I _F =1400A		1.80	2.20	V
		T _J =125°C ,I _F =1400A		1.90		V
		T _J =150°C ,I _F =1400A		1.95		V
I _{RM}	Max reverse recovery current	T _J =150°C ,I _F =1400A,V _R =900V		1410		A
Q _{rr}	Diode reverse recovery charge	T _J =150°C ,I _F =1400A,V _R =900V		556		μ C
E _{rec}	Reverse recovery energy	T _J =150°C ,I _F =1400A,V _R =900V		410		mJ
t _{rr}	Reverse recovery time	T _J =150°C ,I _F =1400A		280		ns
R _{th(j-c)}	Thermal resistance(per chip)	IGBT			16.7	K/kW
		FWD			33.6	K/kW
R _{th(c-H)}	Thermal resistance – case to heatsink	IGBT			12	K/kW
		FWD			12	K/kW
R ₂₅	Resistance	T _{Vj} =25°C		5		kΩ
ΔR/R	Deviation of R100	T _C =100°C, R ₁₀₀ =493W	-5		5	%
P ₂₅	Power dissipation	T _C =25°C		20		mW
B _{25/50}	B-value	R ₂ =R ₂₅ exp [B _{25/50} (1/T ₂ -1/(298,15K))]		3375		K
B _{25/80}		R ₂ =R ₂₅ exp [B _{25/80} (1/T ₂ -1/(298,15K))]		3411		K
B _{25/100}		R ₂ =R ₂₅ exp [B _{25/100} (1/T ₂ -1/(298,15K))]		3433		K
F _m	Mounting torque(M5)		2.4		3	Nm
	Terminal connection torque(M4)		1.8		2.1	Nm
	Terminal connection torque(M8)		8		12	Nm
Outline	M45					

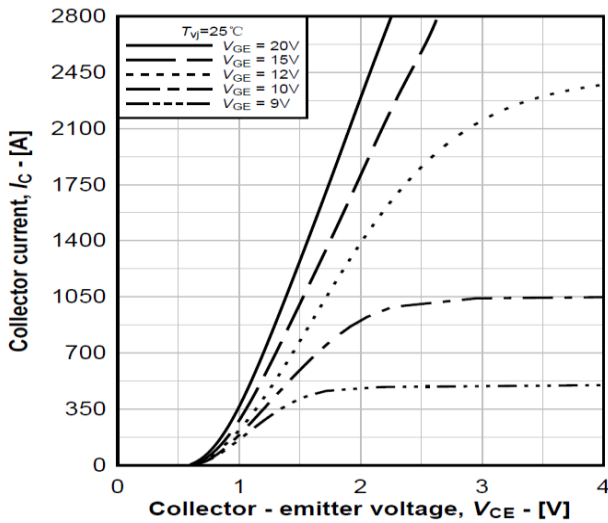


Fig.1 Typical IGBT output characteristics, I_C = f (V_{CE})

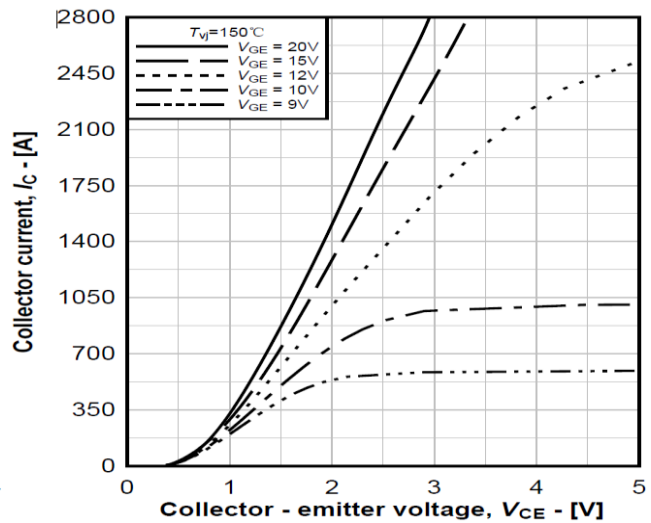


Fig.2 Typical IGBT output characteristics, I_C = f (V_{CE})

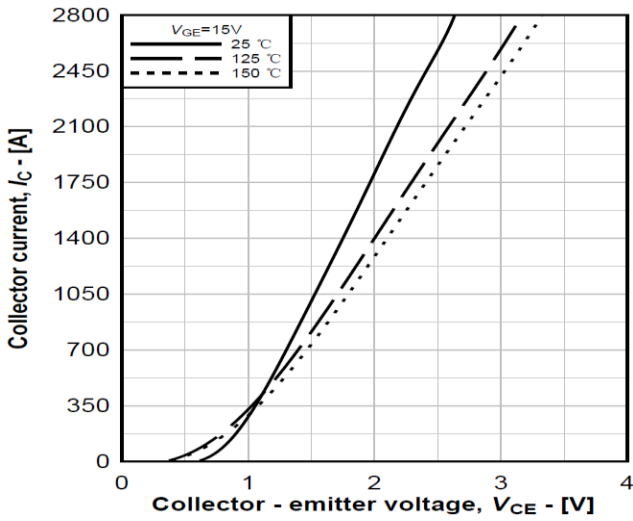


Fig.3 Typical IGBT output characteristics, $I_C = f(V_{CE})$

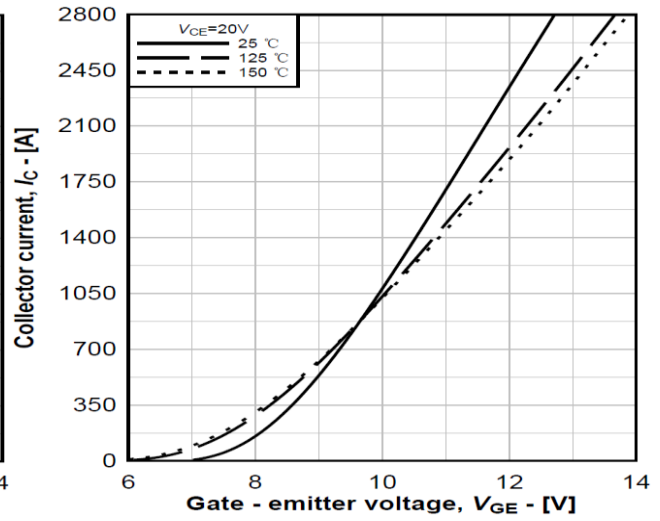


Fig.4 Typical IGBT transfer characteristics, $I_C = f(V_{GE})$

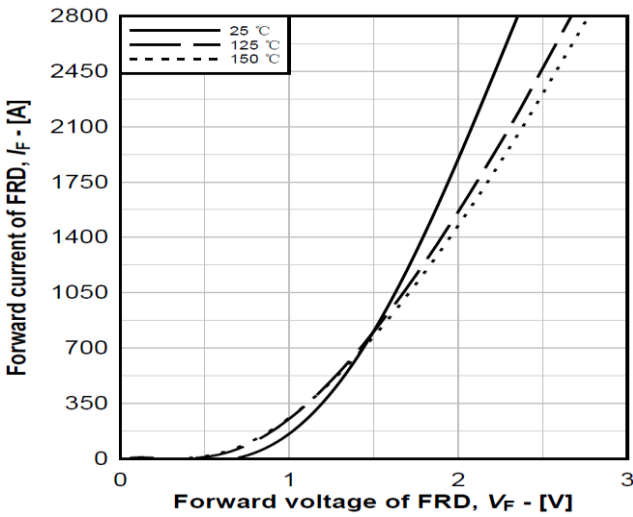


Fig.5 Typical FRD output characteristics, $I_f = f(V_f)$

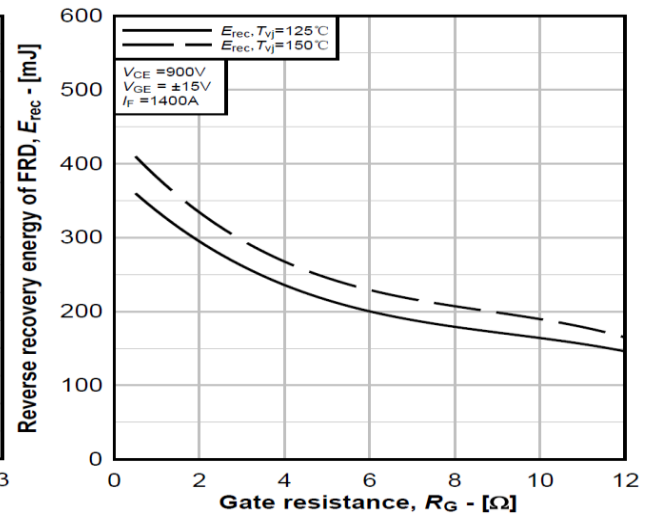


Fig.6 Typical FRD E_{rec} , $E_{rec} = f(R_G)$

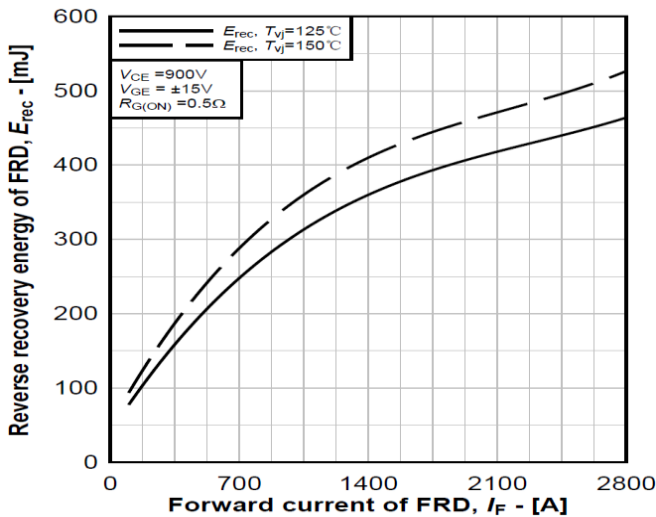


Fig.7 Typical FRD E_{rec} , $E_{rec} = f(I_f)$

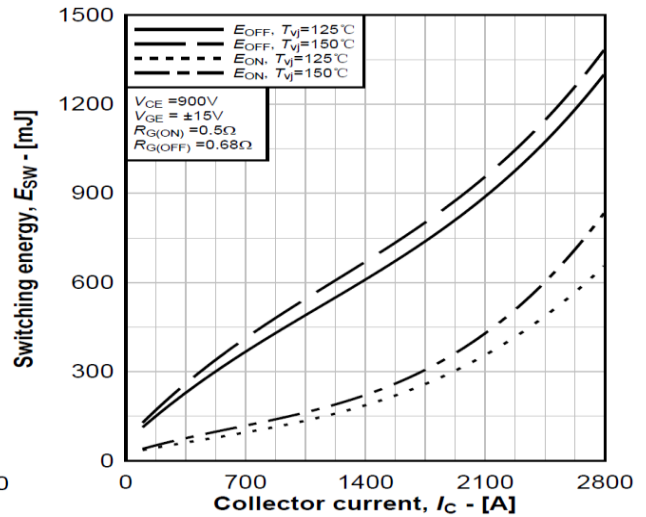


Fig.8 Typical IGBT switching energy, $E_{on} = f(I_c)$, $E_{off} = f(I_c)$

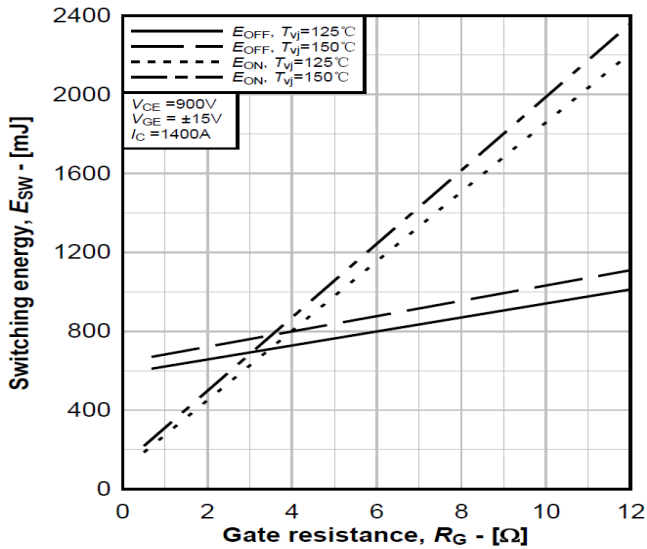


Fig.9 Typical IGBT switching energy, $E_{on} = f(R_G)$, $E_{off} = f(R_G)$

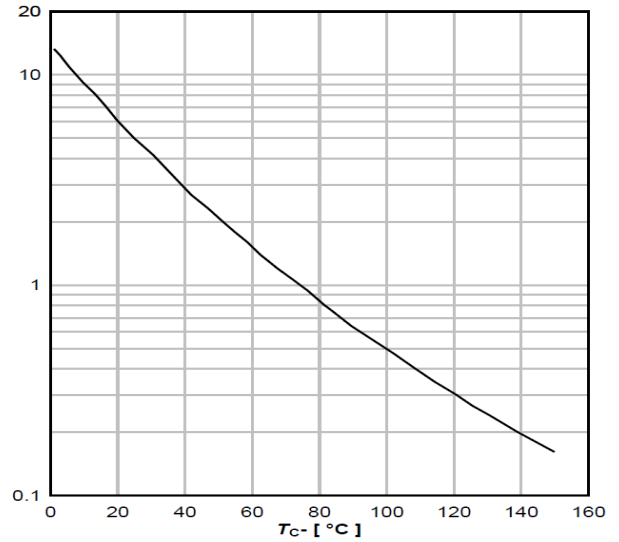


Fig.10 Typical NTC thermistor characteristic, $R = f(T_C)$

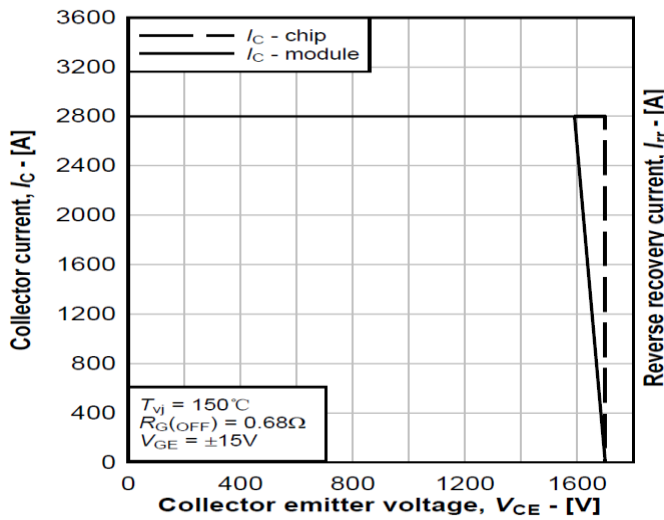


Fig.11 Reverse bias safe operating area of IGBT, $I_C = f(V_{CE})$

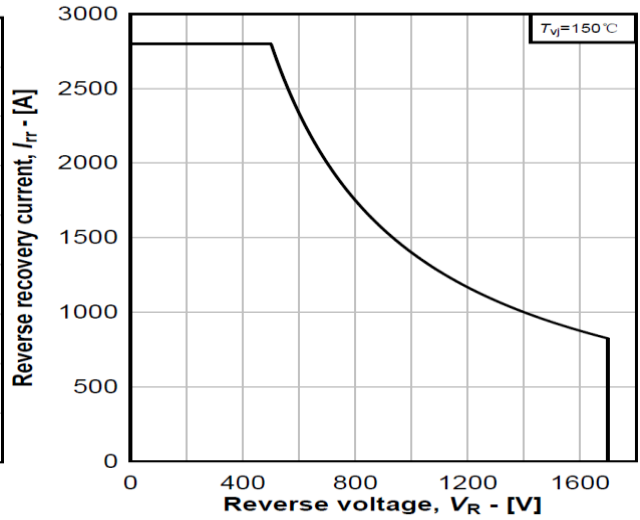


Fig.12 Reverse bias safe operating area of FRD, $I_{rr} = f(V_R)$

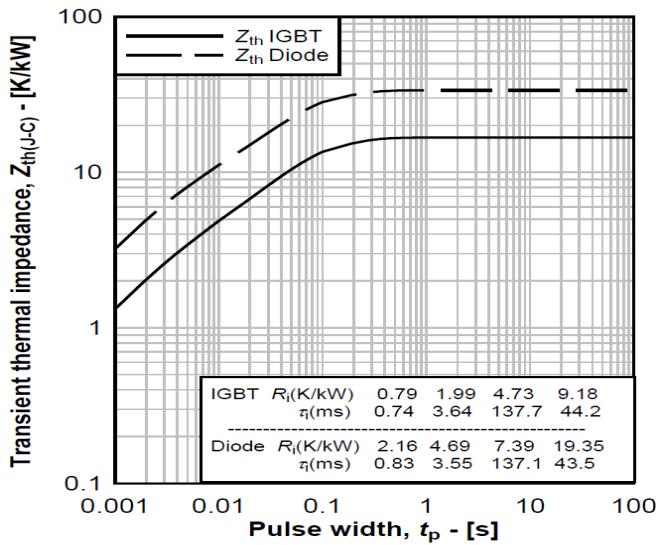
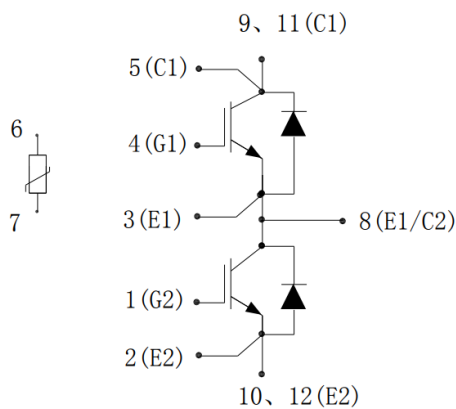
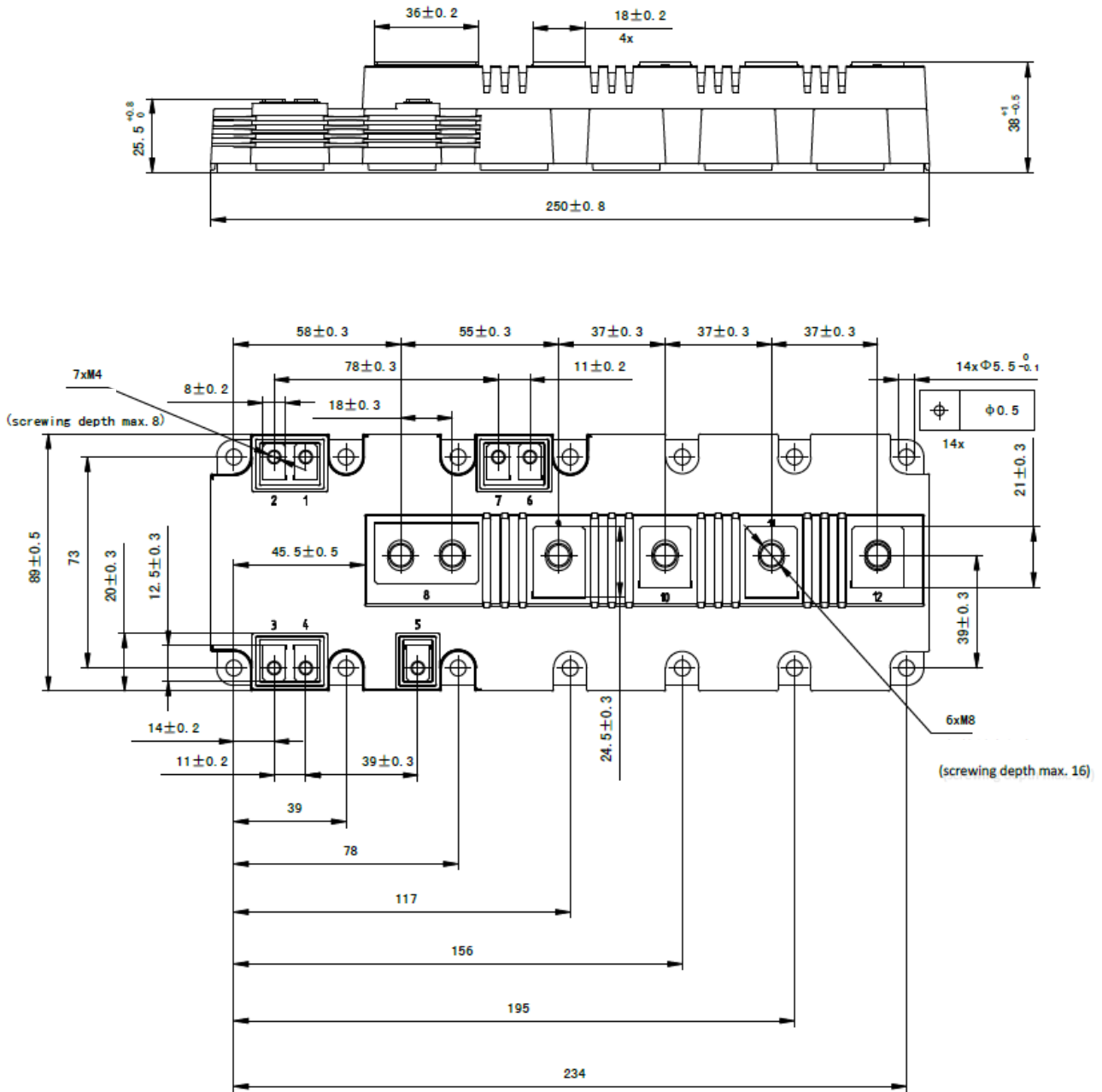


Fig.13 Transient thermal impedance, $Z_{th(j-c)} = f(t_p)$

Outline:



Unmarked dimensional tolerance: $\pm 0.5\text{mm}$

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