**Features:**

- n Cu baseplate
- n Al₂O₃ substrates
- n High thermal cycling capability
- n 10μs Short Circuit Withstand

Typical Applications:

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

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE			UNIT
			Min	Type	Max	
V _{CE(S)}	Collector-Emitter voltage	T _j =25°C			1200	V
V _{GE(S)}	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			7.5	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 _{CE(S)}	Zero gate voltage collector current	T _j =25°C, V _{CE} =1200V, 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	5.0	6.0	7.0	V
V _{CE(sat)}	Collector-Emitter saturation voltage	T _j =25°C, V _{GE} =15V, I _C =1400A		1.8	2.2	V
		T _j =125°C, V _{GE} =15V, I _C =1400A		2.15	2.55	V
		T _j =150°C, V _{GE} =15V, I _C =1400A		2.25	2.65	V
Q _g	Gate Charge	V _{GE} =±15V		13		μC
C _{ies}	Input capacitance	T _j =25°C, V _{CE} =25V, V _{GE} =0V, f=100kHz		118		nF
C _{res}	Reverse transfer capacitance			3.2		nF
t _{(d)on}	Turn-on time	T _j =150°C, V _{CE} =600V, I _C =1400A, V _{GE} =±15V, R _g =1.0Ω, Inductive load		290		ns
t _r				195		ns
t _{(d)off}	Turn-off time			1200		ns
t _f				340		ns
E _{ON}	Turn-on energy loss	T _j =150°C, V _{CE} =600V, I _C =1400A, V _{GE} =±15V,		208		mJ
E _{off}	Turn-off energy loss	R _g =1.0Ω, Inductive load		285		mJ
I _{sc}	Short circuit current	V _{GE} =15V, V _{CC} =800V, T _j =150°C		5800		A
t _{sc}	Short circuit withstand time	T _j =150°C, V _{CC} =800V, V _{GE} =±15V, R _g =7.5 Ω	10			μs

V _F	Forward on voltage	T _j =25°C ,I _F =1400A		1.90	2.30	V
		T _j =125°C ,I _F =1400A		2.10	2.50	V
		T _j =150°C ,I _F =1400A		2.10	2.50	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 =600V		236		μC
E _{rec}	Diode reverse recovery energy	T _j =150°C ,I _F =1400A,V _R =600V		102		mJ
t _{rr}	Reverse recovery time	T _j =150°C ,I _F =1400A		280		ns
R _{th(j-c)}	Thermal resistance(per chip)	IGBT			20	K/kW
		FWD			35.5	K/kW
R _{th(c-H)}	Thermal resistance – case to heatsink	IGBT			9.5	K/kW
		FWD			17	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	Terminal connection torque(M8)		8		10	12.0
	Mounting torque(M5)		3		6	6.0
Outline	1401H3P					

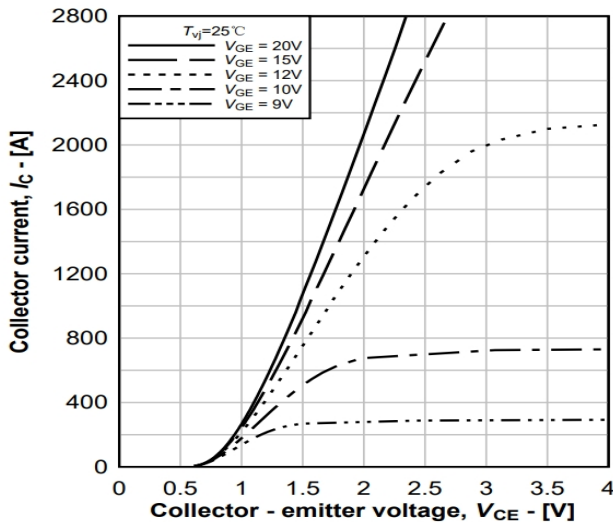


Fig.1 Typical IGBT output characteristics, $I_c = f(V_{CE})$

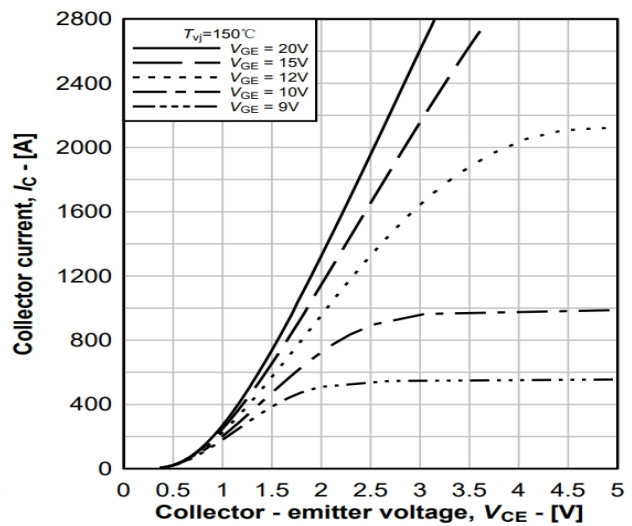


Fig.2 Typical IGBT output characteristics, $I_c = f(V_{CE})$

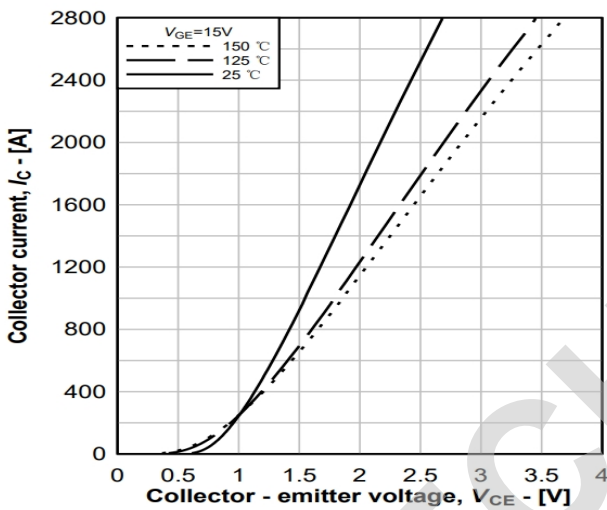


Fig.3 Typical IGBT output characteristics, $I_c = f(V_{CE})$

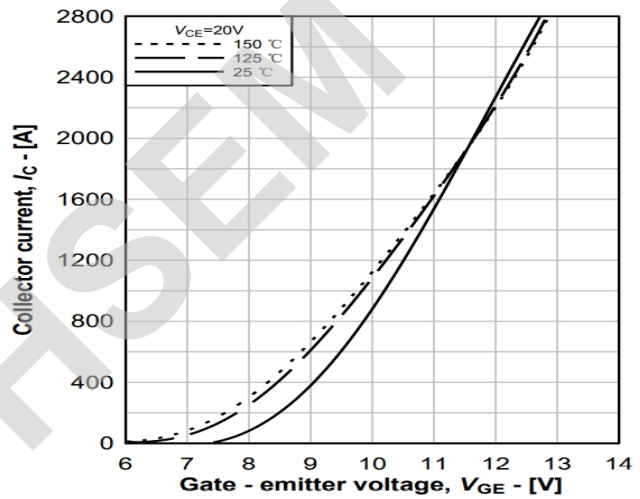


Fig.4 Typical IGBT transfer characteristics, $I_c = f(V_{GE})$

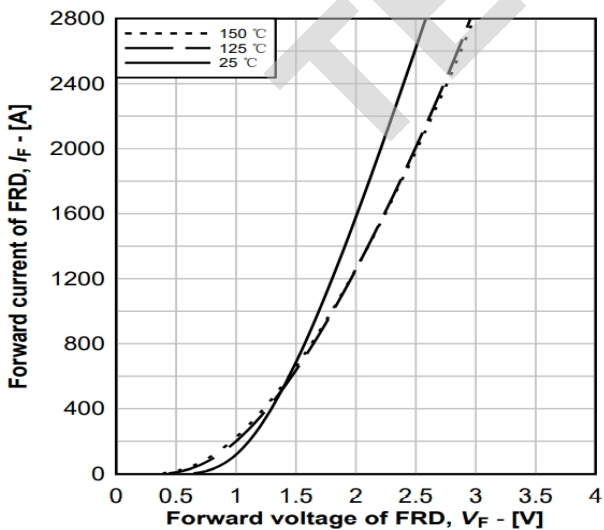


Fig.5 Typical FRD output characteristics, $I_r = f(V_F)$

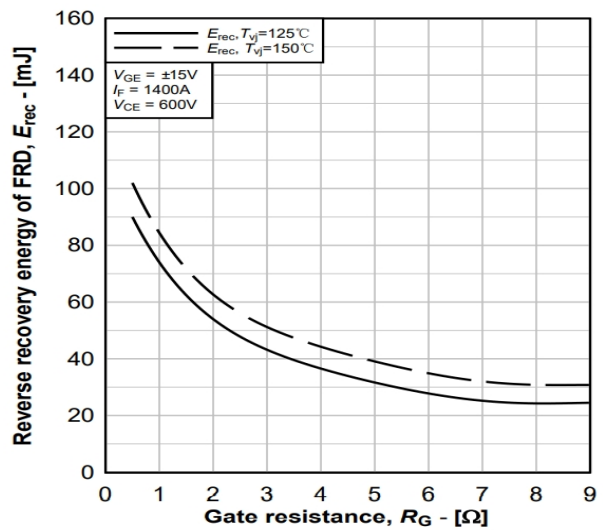


Fig.6 Typical FRD E_{rec} , $E_{rec} = f(R_G)$

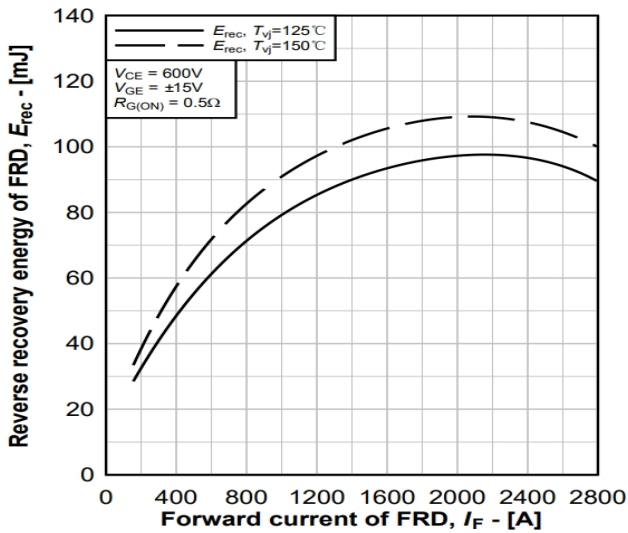


Fig.7 Typical FRD E_{rec} , $E_{rec}=f(I_F)$

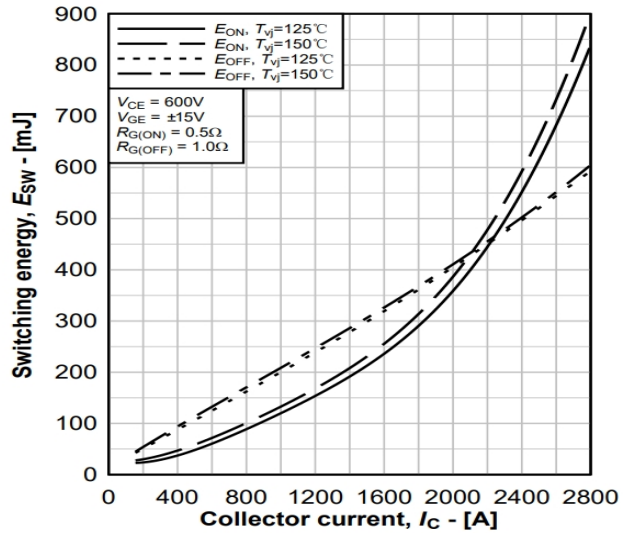


Fig.8 Typical IGBT switching energy, $E_{on}=f(I_C)$, $E_{off}=f(I_C)$

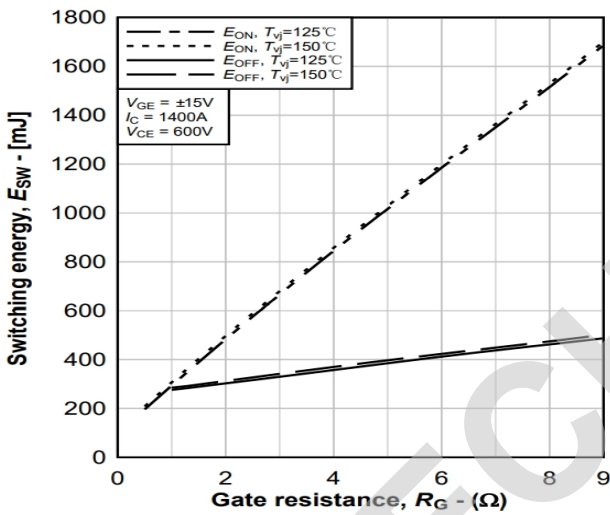


Fig.9 Typical IGBT switching energy, $E_{on}=f(R_G)$, $E_{off}=f(R_G)$

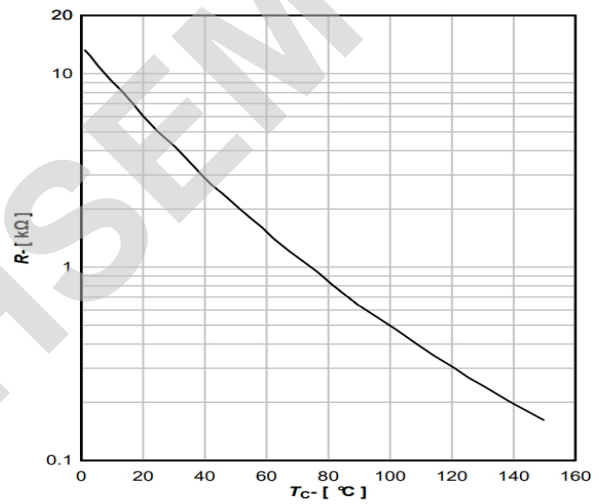


Fig.10 Typical NTC thermistor characteristic, $R_t=f(T_c)$

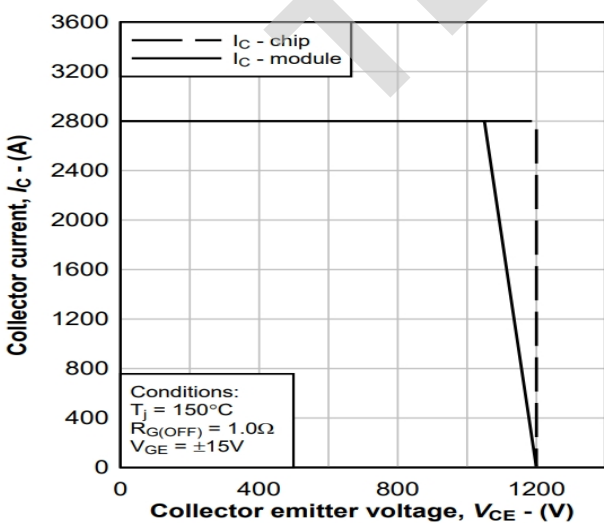


Fig.11 Reverse bias safe operating area of IGBT, $I_C=f(V_{CE})$

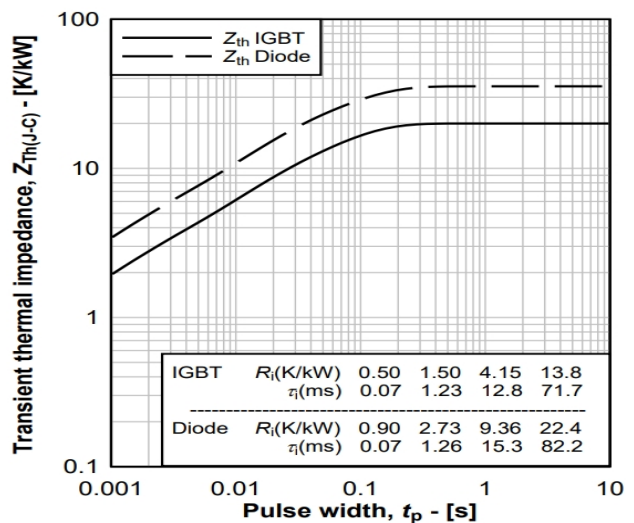
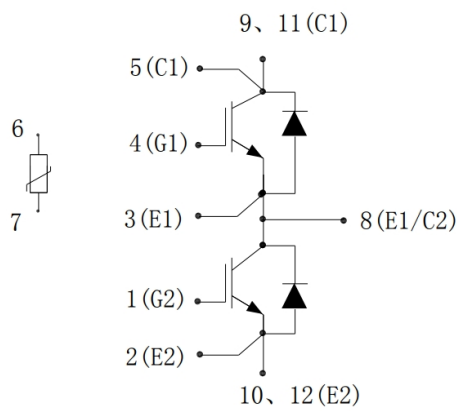
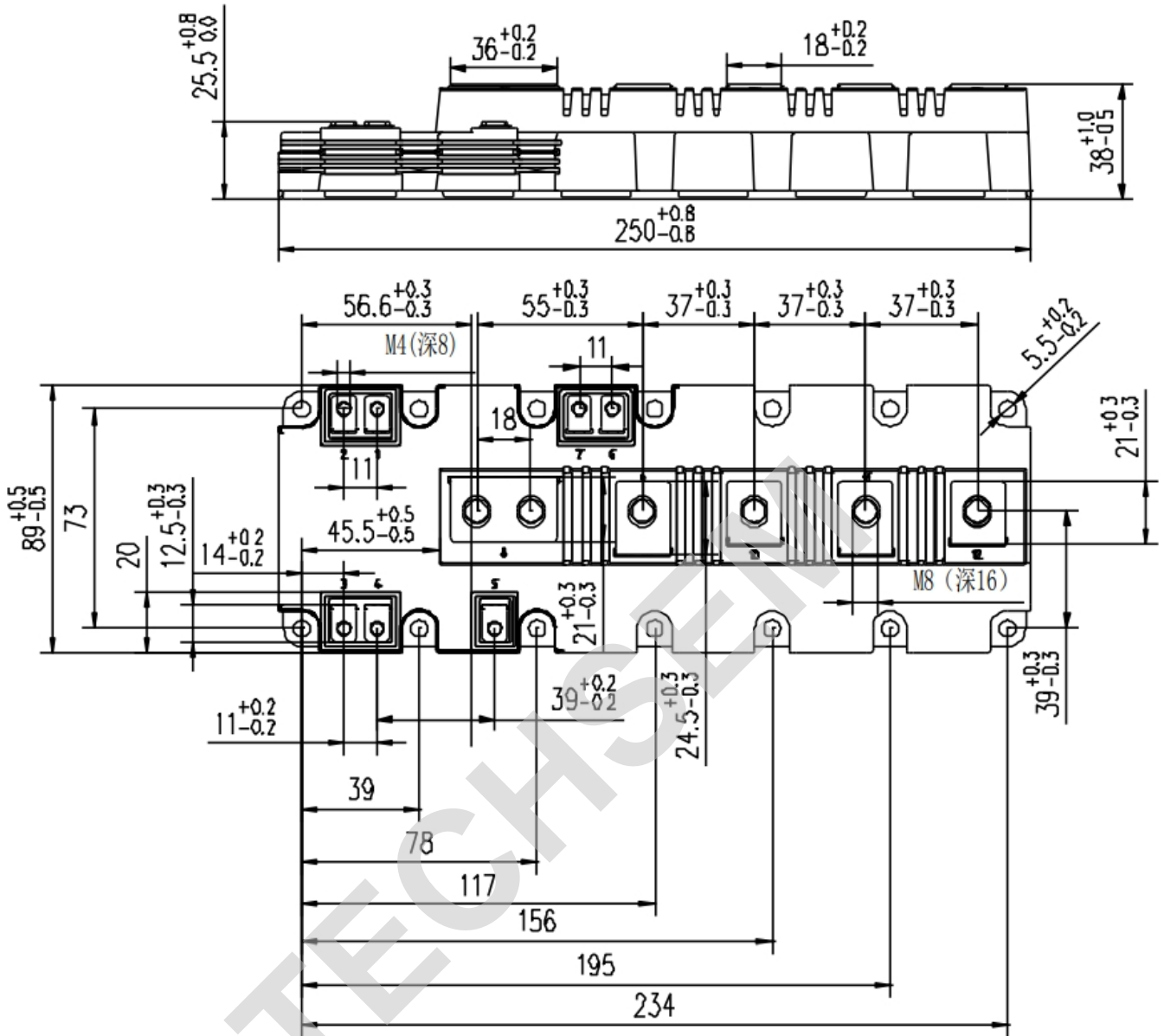


Fig.12 Reverse bias safe operating area of FRD, $I_{rr}=f(V_R)$

Outline:



Unmarked dimensional tolerance: ±0.5mm

TECHSEM reserves the right to change specifications without notice.