**Features:**

- n 10 μ s short circuit capability
- n $V_{CE(sat)}$ with positive temperature coefficient
- n Low $V_{CE(sat)}$ trench IGBT technology
- n Fast & soft reverse recovery anti-parallel FWD
- n Isolated copper baseplate using DBC technology

Typical Applications:

- n Inverter for motor drive
- n AC and DC servo drive amplifier
- n Uninterruptible power supply

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE			UNIT
			Min	Type	Max	
V_{CES}	Collector-Emitter voltage	$T_j=25^\circ\text{C}$			1700	V
V_{GES}	Gate-Emitter voltage	$T_j=25^\circ\text{C}$			± 20	V
I_C	Collector current	$T_c=100^\circ\text{C}$			450	A
I_{CM}	Repetitive peak collector current	$t_p=1\text{ms}$			900	A
P_D	Maximum Power Dissipation	$T_j=175^\circ\text{C}$			2542	W
T_{jmax}	Junction temperature	/			175	$^\circ\text{C}$
T_{jop}	Operating junction temperature		-40		150	$^\circ\text{C}$
T_{stg}	Storage temperature	/	-40		125	$^\circ\text{C}$
V_{iso}	Isolation between terminal and copper base	$T_j=25^\circ\text{C}$, AC: 1minute	4000			V
I_{CES}	Zero gate voltage collector current	$T_j=25^\circ\text{C}$, $V_{CE}=1700\text{V}$, $V_{GE}=0\text{V}$			5	mA
I_{GES}	Gate-Emitter leakage current	$T_j=25^\circ\text{C}$, $V_{CE}=0\text{V}$, $V_{GE}=\pm 20\text{V}$			0.4	μA
$V_{GE(th)}$	Gate-Emitter threshold voltage	$T_j=25^\circ\text{C}$, $V_{CE}=20\text{V}$, $I_C=18\text{mA}$	5.6	6.2	6.8	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	$T_j=25^\circ\text{C}$, $V_{GE}=15\text{V}$, $I_C=450\text{A}$		1.85	2.2	V
		$T_j=125^\circ\text{C}$, $V_{GE}=15\text{V}$, $I_C=450\text{A}$		2.25		
		$T_j=150^\circ\text{C}$, $V_{GE}=15\text{V}$, $I_C=450\text{A}$		2.35		
R_{Gint}	Integrated gate resistor			1.67		Ω

t _{(d)on}	Turn-on time	V _{CC} =900V, I _C =450A, V _{GE} =±15V, R _g =3.3Ω, Inductive load	T _J =25°C	179		ns
			T _J =125°C	208		ns
			T _J =150°C	208		ns
t _r			T _J =25°C	105		ns
			T _J =125°C	120		ns
			T _J =150°C	120		ns
t _{(d)off}	Turn-off time		T _J =25°C	680		ns
			T _J =125°C	784		ns
			T _J =150°C	800		ns
t _f		T _J =25°C	375		ns	
		T _J =125°C	613		ns	
		T _J =150°C	720		ns	
E _{on}	Turn-on switching loss	T _J =25°C	116		mJ	
		T _J =125°C	152		mJ	
		T _J =150°C	167		mJ	
E _{off}	Turn-off switching loss	T _J =25°C	113		mJ	
		T _J =125°C	171		mJ	
		T _J =150°C	179		mJ	
I _{sc}	SC data	V _{GE} =15V, V _{CC} =1000V, T _J =150°C, V _{CEM} ≤1700V		1800		A
V _F	Forward on voltage	T _J =25°C, I _F =450A		1.8	2.25	V
		T _J =125°C, I _F =450A		1.95		V
		T _J =150°C, I _F =450A		1.90		V
Q _r	Recovered charge	T _J =25°C		105		μC
		T _J =125°C		187		μC
		T _J =150°C		209		μC
I _{RM}	Peak reverse recovery current	V _R =900V, I _F =450A, -di/dt=4580A/μs, V _{GE} =-15V	T _J =25°C	198		A
		T _J =125°C	578		A	
		T _J =150°C	585		A	
E _{rec}	Reverse recovery energy	T _J =25°C	69			mJ
		T _J =125°C	129			mJ
		T _J =150°C	150			mJ
R ₂₅	Rated resistance			5.0		kΩ
ΔR/R	Deviation of R ₁₀₀	T _C =100°C, R ₁₀₀ =493.3Ω	-5		5	%
P ₂₅	Power dissipation				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}	B-value	R ₂ =R ₂₅ exp[B _{25/80} (1/T ₂ -1/(298.15K))]		3411		K
B _{25/100}	B-value	R ₂ =R ₂₅ exp[B _{25/100} (1/T ₂ -1/(298.15K))]		3433		K
L _{CE}	Stray inductance			20		nH
R _{CC+EE'}	Module lead resistance, terminal to chip			1.10		mΩ
R _{th(j-c)}	Thermal resistance(per chip)	IGBT		0.059		°C/W
		FWD		0.083		°C/W
W _t	Weight				350	g
Outline	465H3P					

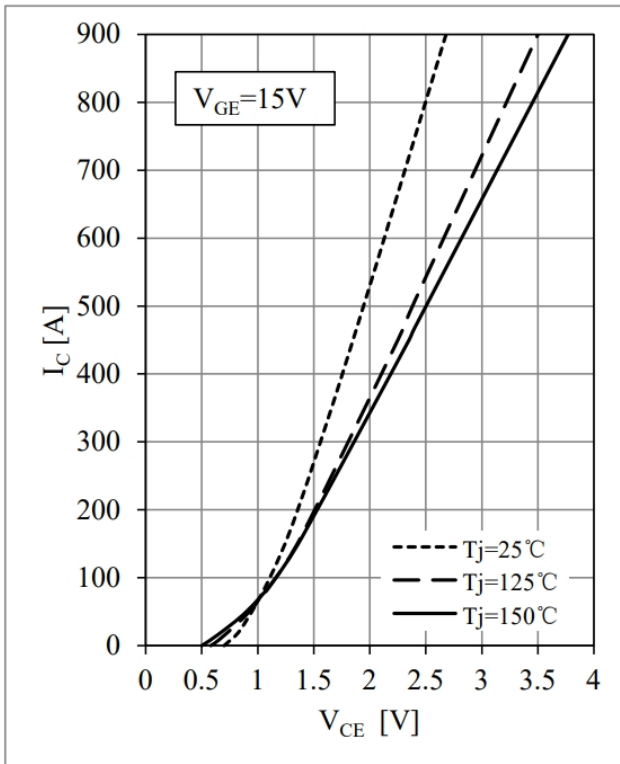


Fig 1. IGBT Output Characteristics

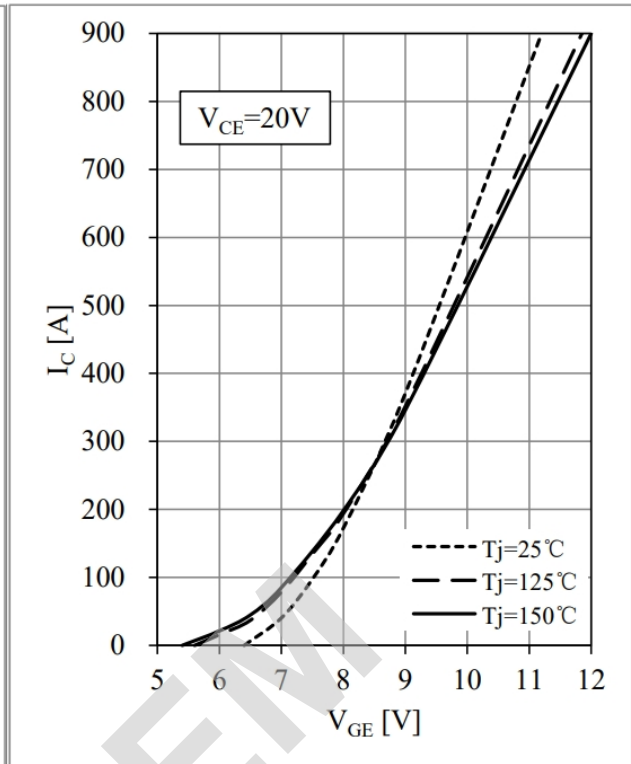


Fig 2. IGBT Transfer Characteristics

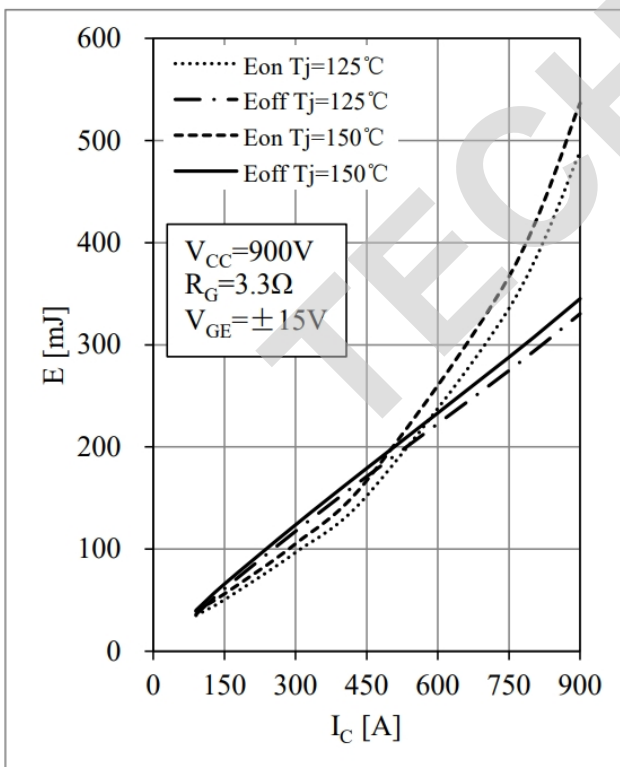


Fig 3. IGBT Switching Loss vs. I_C

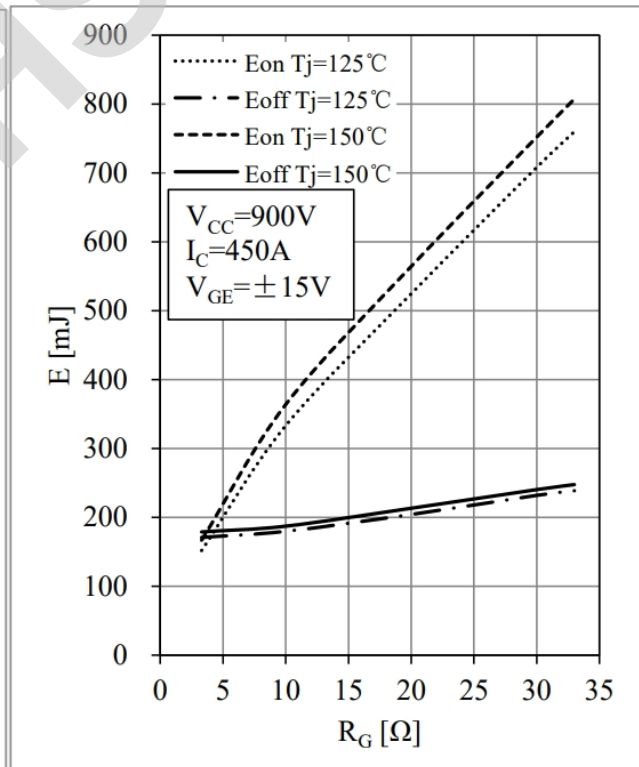


Fig 4. IGBT Switching Loss vs. R_G

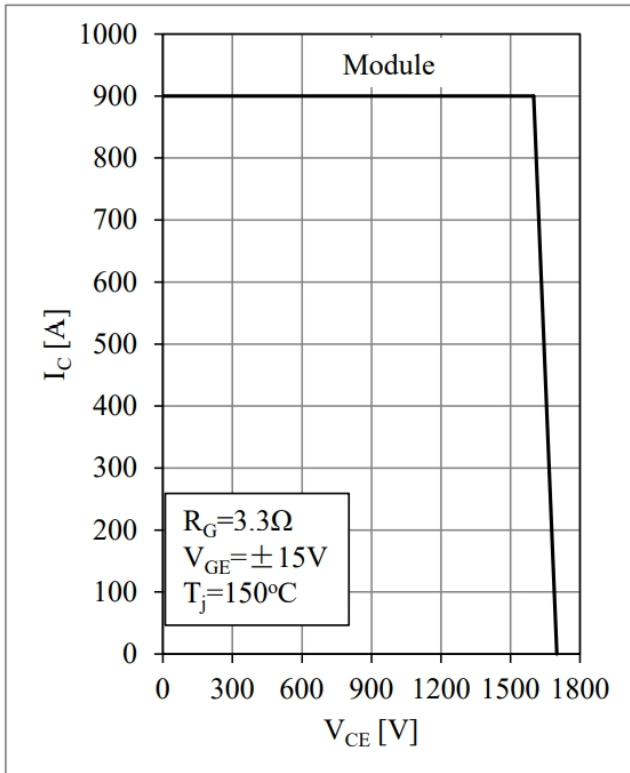


Fig 5. RBSOA

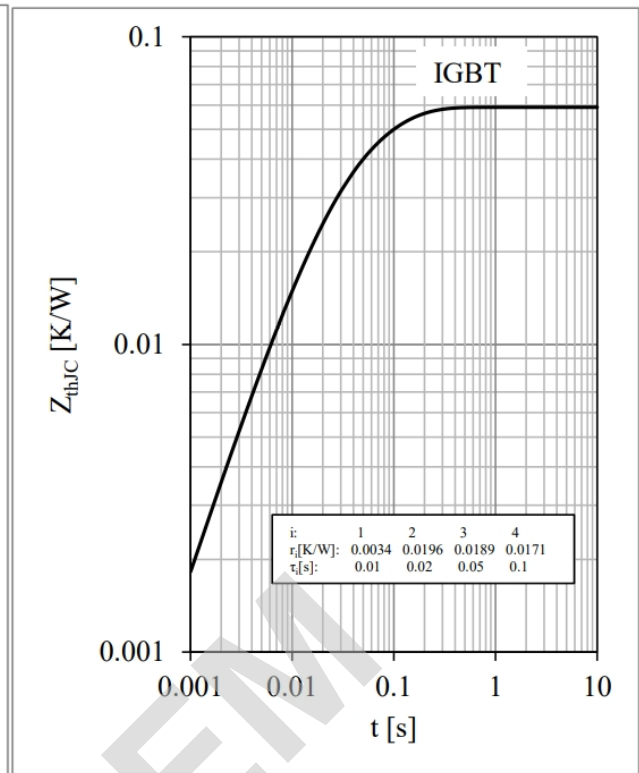


Fig 6. IGBT Transient Thermal Impedance

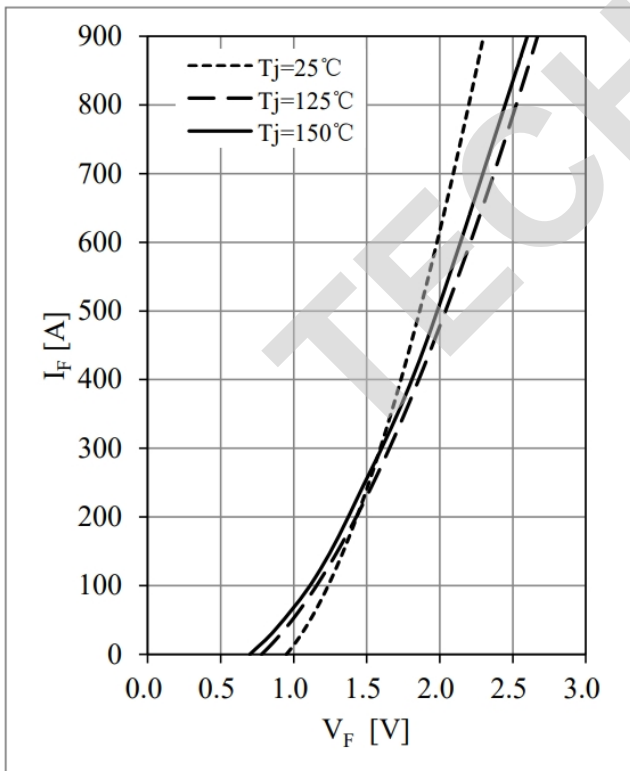


Fig 7. Diode Forward Characteristics

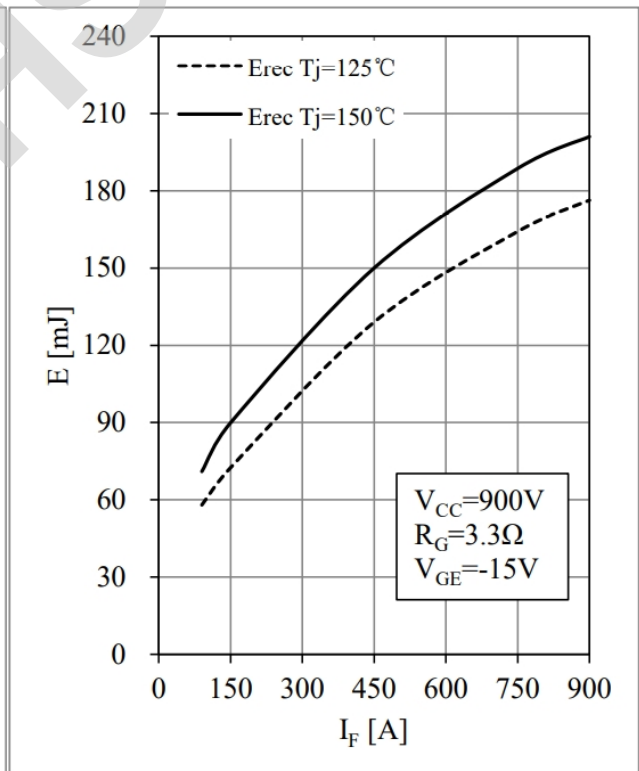


Fig 8. Diode Switching Loss vs. I_F

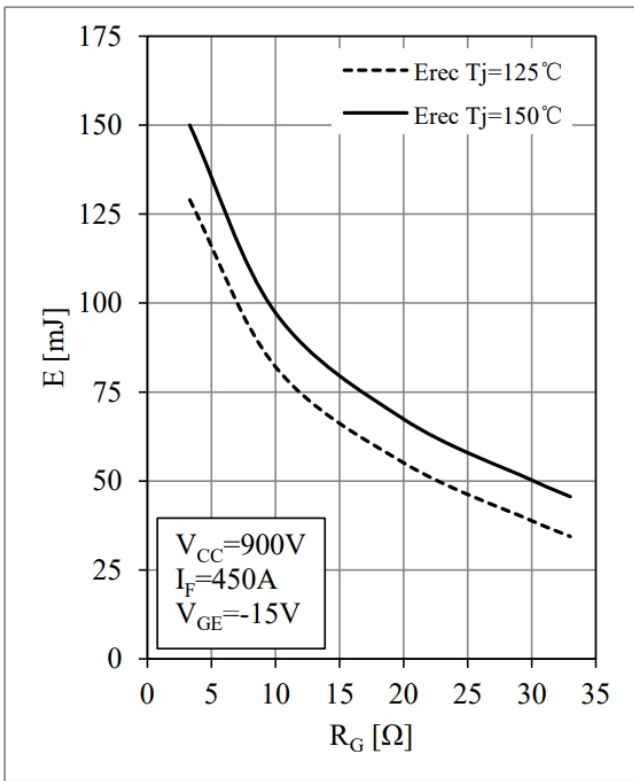


Fig 9. Diode Switching Loss vs. R_G

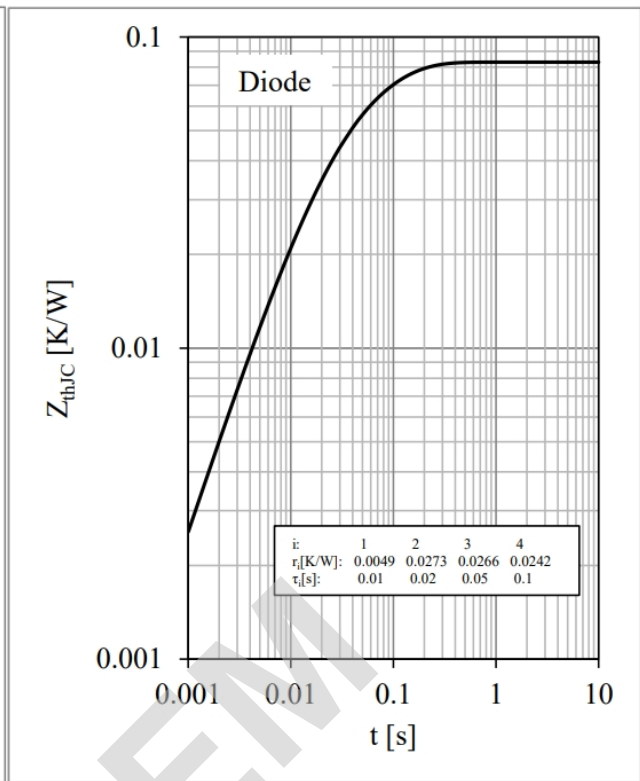


Fig 10. Diode Transient Thermal Impedance

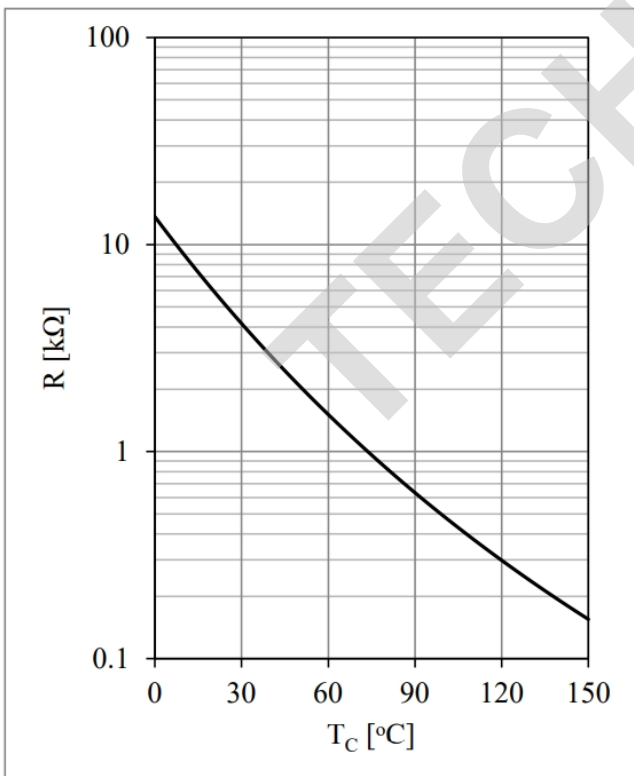


Fig 11. NTC Temperature Characteristic

