

MRI100.17

2 in 1 IGBT Modules

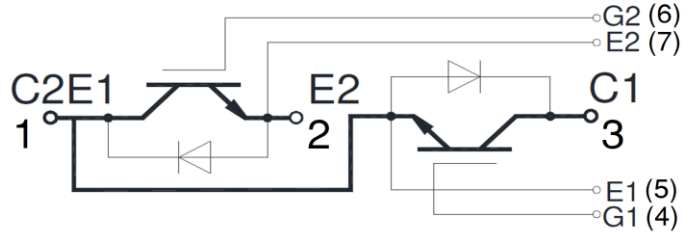
Features:

- VCE(sat) with positive temperature coefficient
- Low VCE(sat) Trench IGBT technology
- Maximum junction temperature 175°C
- 10µs short circuit capability
- Fast & soft reverse recovery anti-parallel FWD



Typical applications:

- High frequency switching application
- Motor drives
- UPS system



Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
● IGBT, Inverter						
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	Continuous @ T _c = 25 °C			173	A
		Continuous @ T _c = 100 °C			112	A
I _{CP}	Repetitive peak collector current	T _p = 1 ms			200	A
P _{tot}	Power dissipation per IGBT	T _C = 25°C, T _J = 175°C			666	W
I _{CES}	Collector-emitter cut-off current	T _J = 25°C, V _{CE} = 1700V, V _{GE} = 0V			5	mA
I _{GES}	Gate-Emitter leakage current	T _J = 25°C, V _{CE} = 0V, V _{GE} = ±20V	-400		400	nA
V _{GE(th)}	Gate-Emitter threshold voltage	T _J = 25°C, V _{CE} = 20V, I _C = 4mA	5.6	6.2	6.8	V
V _{CE(sat)}	Collector-Emitter saturation voltage	T _J = 25°C, V _{GE} = 15V, I _C = 100A		1.85	2.20	V
		T _J = 125°C, V _{GE} = 15V, I _C = 100A		2.25		V
		T _J = 150°C, V _{GE} = 15V, I _C = 100A		2.35		V
Q _g	Gate charge	V _{GE} = ±15V		0.94		μC
R _{Gint}	Internal gate resistor	T _J = 25°C		7.5		Ω
C _{ies}	Input capacitance	T _J = 25°C, V _{CE} = 25V, V _{GE} = 0V, f = 1MHz		12.0		nF
C _{res}	Reverse transfer capacitance			0.29		nF
t _{d,on}	Turn-on time	T _J = 150°C, V _{CC} = 900V, I _C = 100A, V _{GE} = ±15V, R _G = 4.7Ω, inductive load		302		ns
t _r	Rise time			69		ns
t _{d,off}	Turn-off time			463		ns
t _f	Fall time			607		ns
E _{on}	Turn-on energy loss per pulse			43.9		mJ
E _{off}	Turn-off energy loss per pulse			25.7		mJ
I _{sc}	SC data	V _{GE} ≤ 15V, V _{CC} = 1000V, V _{CEmax} = V _{CES} -L _{SCE} ·di/dt, tp ≤ 10μs, T _J = 150°C		400		A
R _{th (j-c)}	Thermal resistance, junction to case	Per IGBT			0.225	°C/W
T _{jop}	Temperature under switching conditions		-40		+150	°C

Symbol	Characteristics	Test Conditions		Value			Unit
				Min	Typ	Max	
● Diode, Inverter							
V _{RRM}	Repetitive peak reverse voltage	T _j = 25°C				1700	V
I _F	Forward current	Continuous				100	A
I _{FRM}	Repetitive peak forward current	T _p = 1ms				200	A
V _F	Forward voltage	I _F = 100A	T _j = 25°C		1.80	2.25	v
			T _j = 125°C		1.90		v
			T _j = 150°C		1.95		v
I _{RM}	Peak reverse recovery current	V _R = 900V, I _F = 100A, di/dt = 960A/μs, V _{GE} = -15V T _j = 150°C			91		A
Q _{RR}	Reverse recovery charge				46.2		μC
E _{rec}	Reverse recovery energy				24.6		mJ
R _{th (j-c)}	Thermal resistance, junction to case	Per diode				0.391	°C/W
T _{jop}	Temperature under switching conditions			-40		+150	°C

• Package						
$R_{th(C-H)}$	Thermal resistance, case to heatsink	per module		0.05		$^{\circ}\text{C}/\text{W}$
V_{ISO}	Isolation test voltage	$T_j = 25^{\circ}\text{C}, \text{AC: } 1 \text{ minute}$	4000			V
T_{jmax}	Max junction temperature				+175	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-40		+125	$^{\circ}\text{C}$
M	Mounting torque for module (M6)		3.0		5.0	N·m
	Terminal connection torque (M5)		2.5		5.0	N·m
W_t	Weight			150		g
Outline	251H3P					

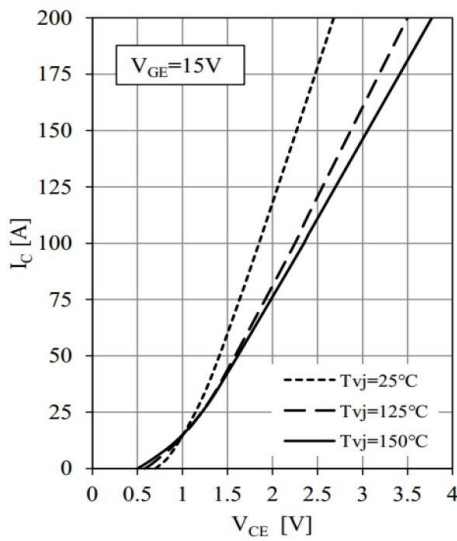


Fig 1. IGBT Output Characteristics

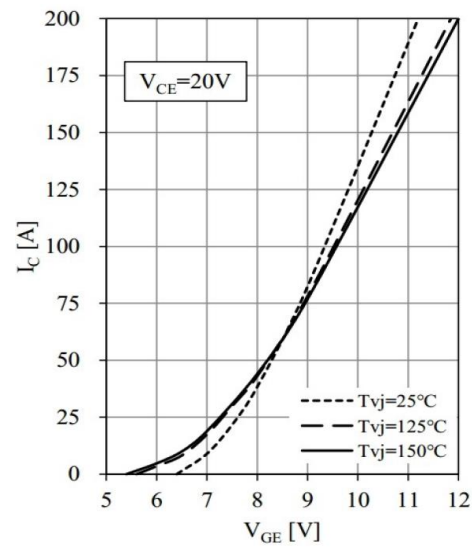


Fig 2. IGBT Transfer Characteristics

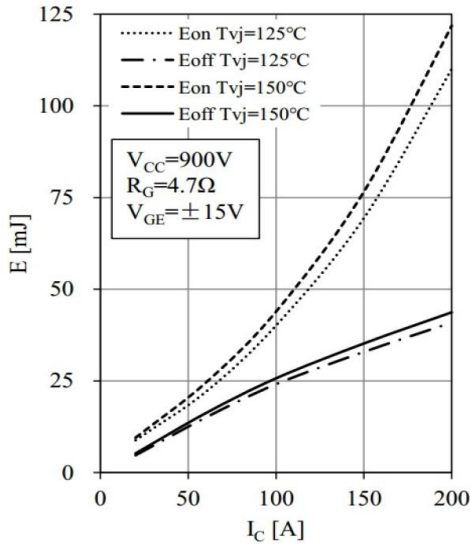


Fig 3. IGBT Switching Loss vs. I_C

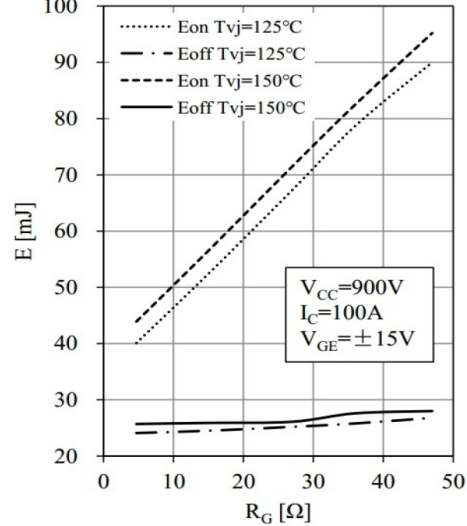


Fig 4. IGBT Switching Loss vs. R_G

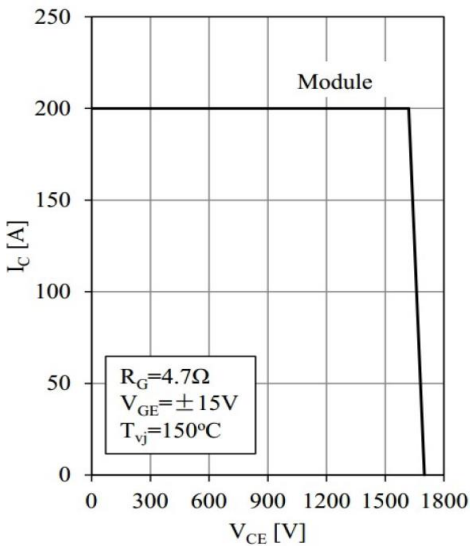


Fig 5. RBSOA

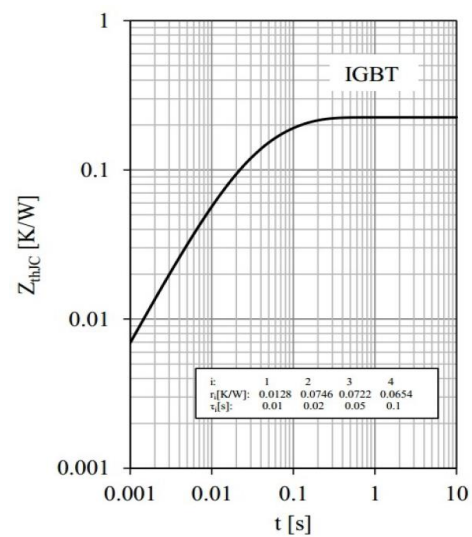


Fig 6. IGBT Transient Thermal Impedance

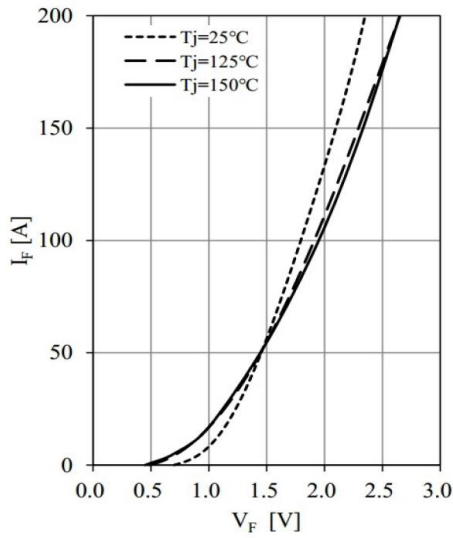


Fig 7. Diode Forward Characteristics

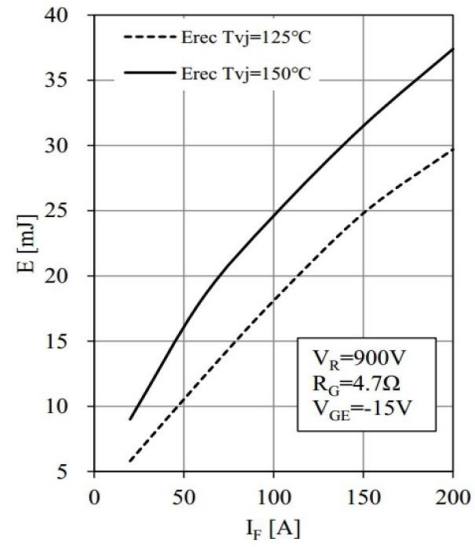


Fig 8. Diode Switching Loss vs. I_F

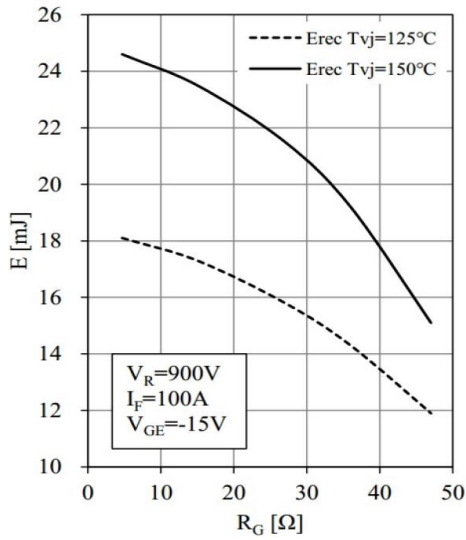


Fig 9. Diode Switching Loss vs. R_G

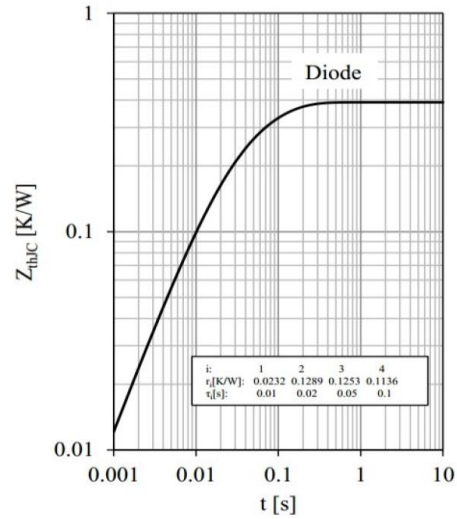
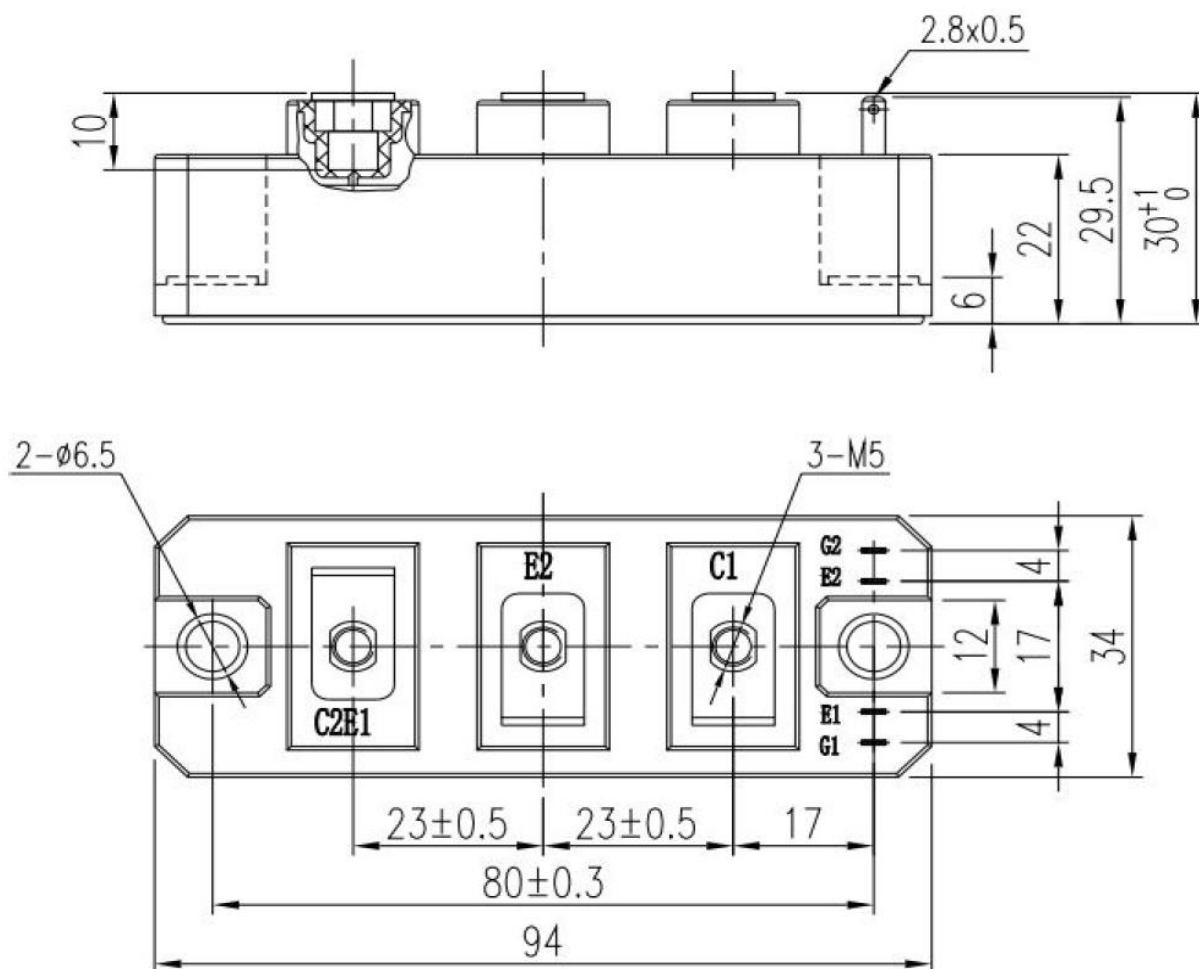


Fig 10. Diode Transient Thermal Impedance

Outline:



(dimensions in mm)

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