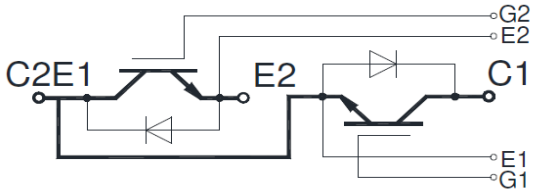
MRI600.17-E

2 in 1 IGBT Modules

Features:

- Low V_{CEsat}
- Standard housing
- Low inductance case
- Fast & soft reverse recovery anti-parallel FWD
- Isolated copper baseplate using DBC technology



Typical applications:

- AC motor control
- Inverter and power supplies
- Motion/servo control
- Photovoltaic/Fuel cell
- Uninterruptible Power Supply System

Symbol	Characteristcs	Test Conditions	Value			Unit
			Min	Typ	Max	
V_{CES}	Collector-Emitter voltage	Tj = 25°C			1700	V
V_{GES}	Gate-Emitter voltage	Tj = 25°C			±20	V
I_C	Collector current	Continuous @ T_c = 100 °C			600	A
I_{CM}	Repetive peak collector current	T_p = 1 ms			1200	A
P_C	Collector power dissipation	Tj = 175°C, 1 device			4166	W
T_j	Junction temperature	/	-40		175	°C
T_{stg}	Storage temperature	/	-40		125	°C
V_{ISO}	Isolation between terminal and copper base	Tj = 25°C, AC: 1 minute	4000			V
Screw torque	Mounting (M5)	/	3.0		6.0	N·m
	Terminals (M6)	/	3.0		6.0	N·m
I_{CES}	Zero gate voltage collector current	Tj = 25°C, V_{CE} = V_{CES}, V_{GE} = 0V			5.0	mA
I_{GES}	Gate-Emitter leakage current	Tj = 25°C, V_{CE} = 0V, V_{GE} = ±20V			400	nA
$V_{GE(th)}$	Gate-Emitter threshold voltage	Tj = 25°C, V_{CE} = 20V, I_C = 12mA	5.6	6.2	6.8	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	Tj = 25°C, V_{GE} = 15V, I_C = 600A		1.85	2.20	V
		Tj = 125°C, V_{GE} = 15V, I_C = 600A		2.25		V
		Tj = 150°C, V_{GE} = 15V, I_C = 600A		2.35		V
Q_G	Gate charge	V_{GE} = ±15V		4.50		µC
R_{Gint}	Internal gate resistor	Tj = 25°C		1.30		Ω
C_{ies}	Input capacitance	Tj = 25°C, V_{CE} = 10V, V_{GE} = 0V, f = 1MHz		45.9		nF
C_{res}	Reverse transfer capacitance			1.4		nF
t_{on}	Turn-on time	Tj = 150°C, V_{CC} = 900V, I_C = 600A, V_{GE} = ±15V, R_G = 1.0Ω, inductive load		192		ns
t_r				80		ns
t_{off}	Turn-off time			640		ns
t_f				216		ns
E_{on}	Turn-on energy loss per pulse	Tj = 150°C, V_{CC} = 900V, I_C = 600A, V_{GE} = ±15V, R_G = 1.0Ω, inductive load		259		mJ
E_{off}	Turn-off energy loss per pulse			215		mJ
I_{SC}	Short circuit	V_{CC} = 1000V, V_{GE} = 15V, Tj = 150°C, V_{CEM} = ≤ 1700V		2300		A
t_{SC}	Short circuit withstand time	Tj = 150°C, V_{CC} = 720V, V_{GE} = ±15V, R_G = 7.5Ω	10			µs

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Symbol	Characteristcs	Test Conditions	Value			Unit
			Min	Typ	Max	
V_F	Forward on voltage	Tj = 25°C, I_F = 600A, V_{GE} = 0V		1.80	2.25	V
		Tj = 125°C, I_F = 600A, V_{GE} = 0V		1.95		V
		Tj = 150°C, I_F = 600A, V_{GE} = 0V		1.90		V
I_{RM}	Peak reverse recovery current	I_F = 600A, -di/dt = 7475 A/µs, V_R = 900V, V_{GE} = -15V, Tj = 150°C		670		A
Q_R	Recovery charge			314		µC
E_{rec}	Reverse recovery energy			198		mJ
t_{rr}	Reverse recovery time	Tj = 150°C, I_F = 600A		1160		ns
$R_{th(j-c)}$	Thermal resistance (1 device)	IGBT			0.036	°C/W
		FWD			0.128	°C/W
$R_{th(c-f)}$	Contact thermal resistance (1 device)	with thermal compound		0.009		°C/W
R_{25}	Rated resistance	T_{VJ} = 25°C		5.0		kΩ
ΔR/R	Deviation of R100	Tc = 100°C, R_{100}=493.3Ω	-5		5	%
P_{25}	Power dissipation	Continuous @ T_C = 100°C			20.0	mW
$B_{25/50}$	B-value	$R_2=R_{25}$ exp [$B_{25/50}$ (1/T_2-1/(298,15 K))]		3375		K
$B_{25/80}$	B-value	$R_2=R_{25}$ exp [$B_{25/80}$ (1/T_2-1/(298,15 K))]		3411		K
$B_{25/100}$	B-value	$R_2=R_{25}$ exp [$B_{25/100}$ (1/T_2-1/(298,15 K))]		3433		K
W_t	Weight				350	g
Outline	465H3P					

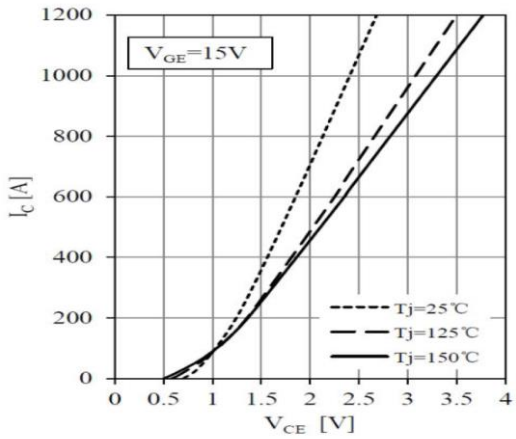

Fig 1. IGBT Output Characteristics

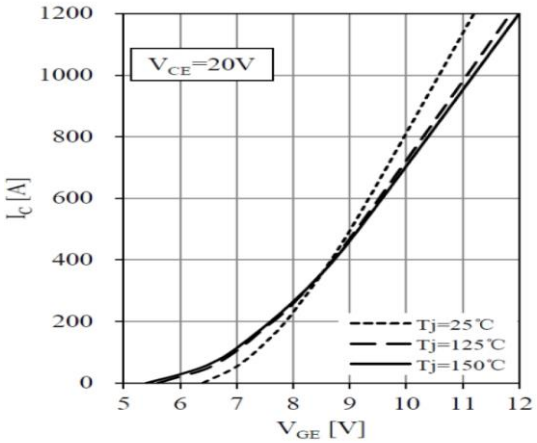

Fig 2. IGBT Transfer Characteristics

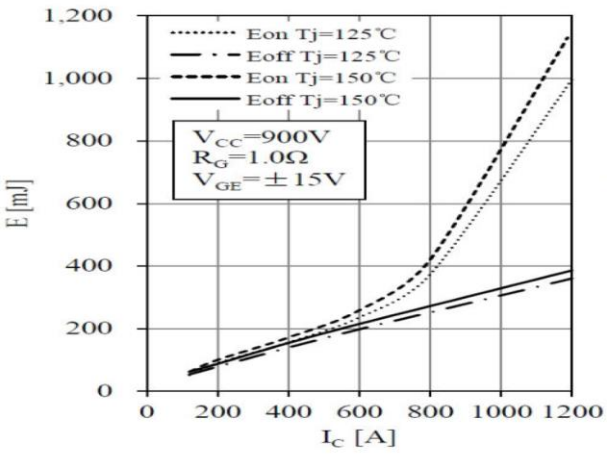

Fig 3. IGBT Switching Loss vs. Ic

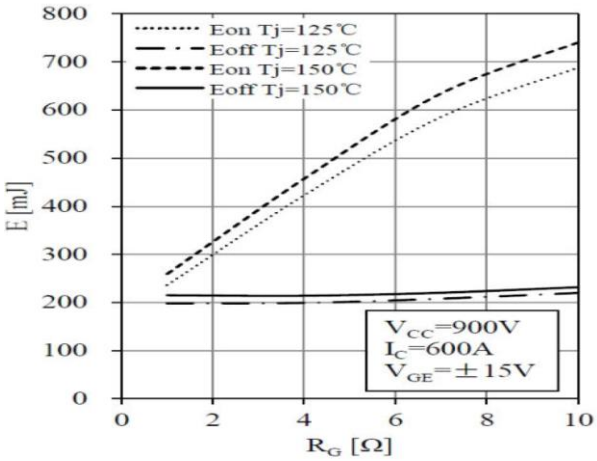

Fig 4. IGBT Switching Loss vs. RG

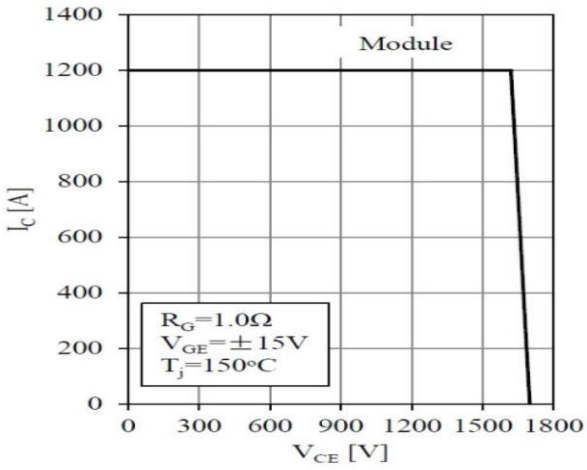

Fig 5. RBSOA

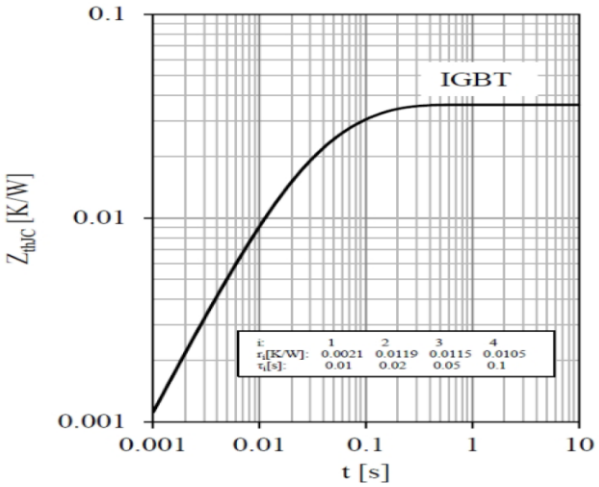

Fig 6. IGBT Transient Thermal Impedance

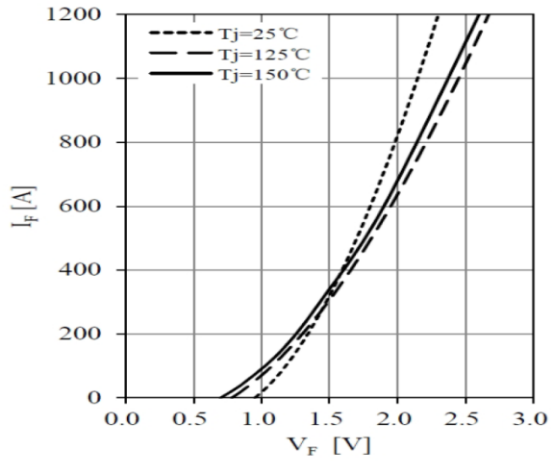

Fig 7. Diode Forward Characteristics

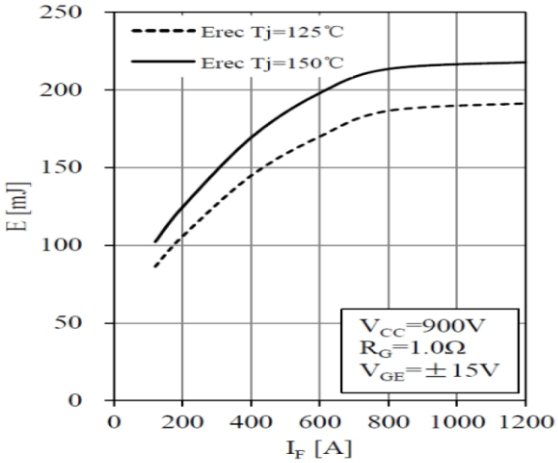

Fig 8. Diode Switching Loss vs. IF

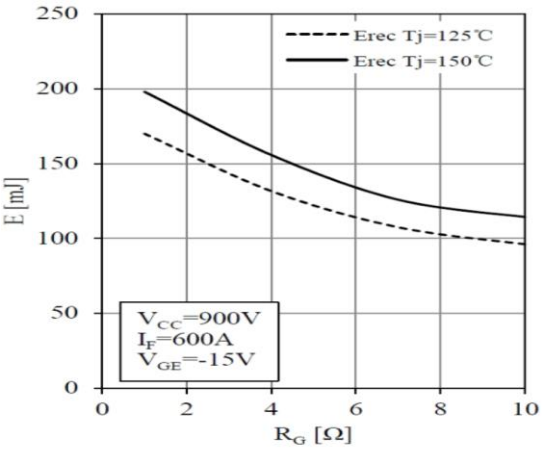

Fig 9. Diode Switching Loss vs. RG

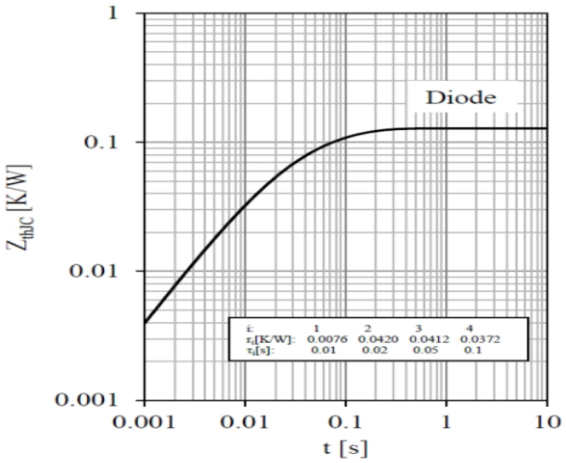

Fig 10. Diode Transient Thermal Impedance

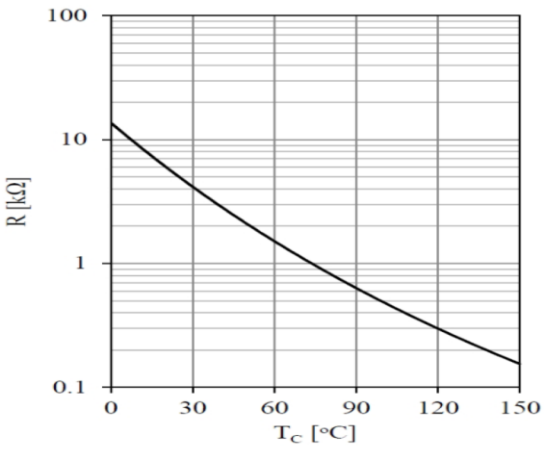

Fig 11. NTC Temperature Characteristic

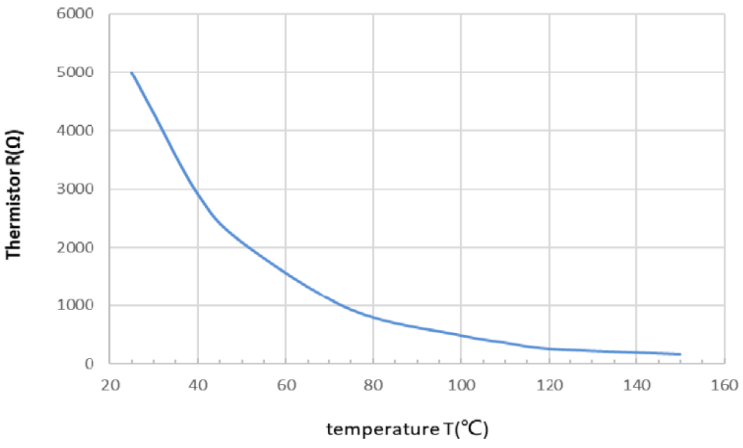

Fig 12.Thermistor Vs. temperature

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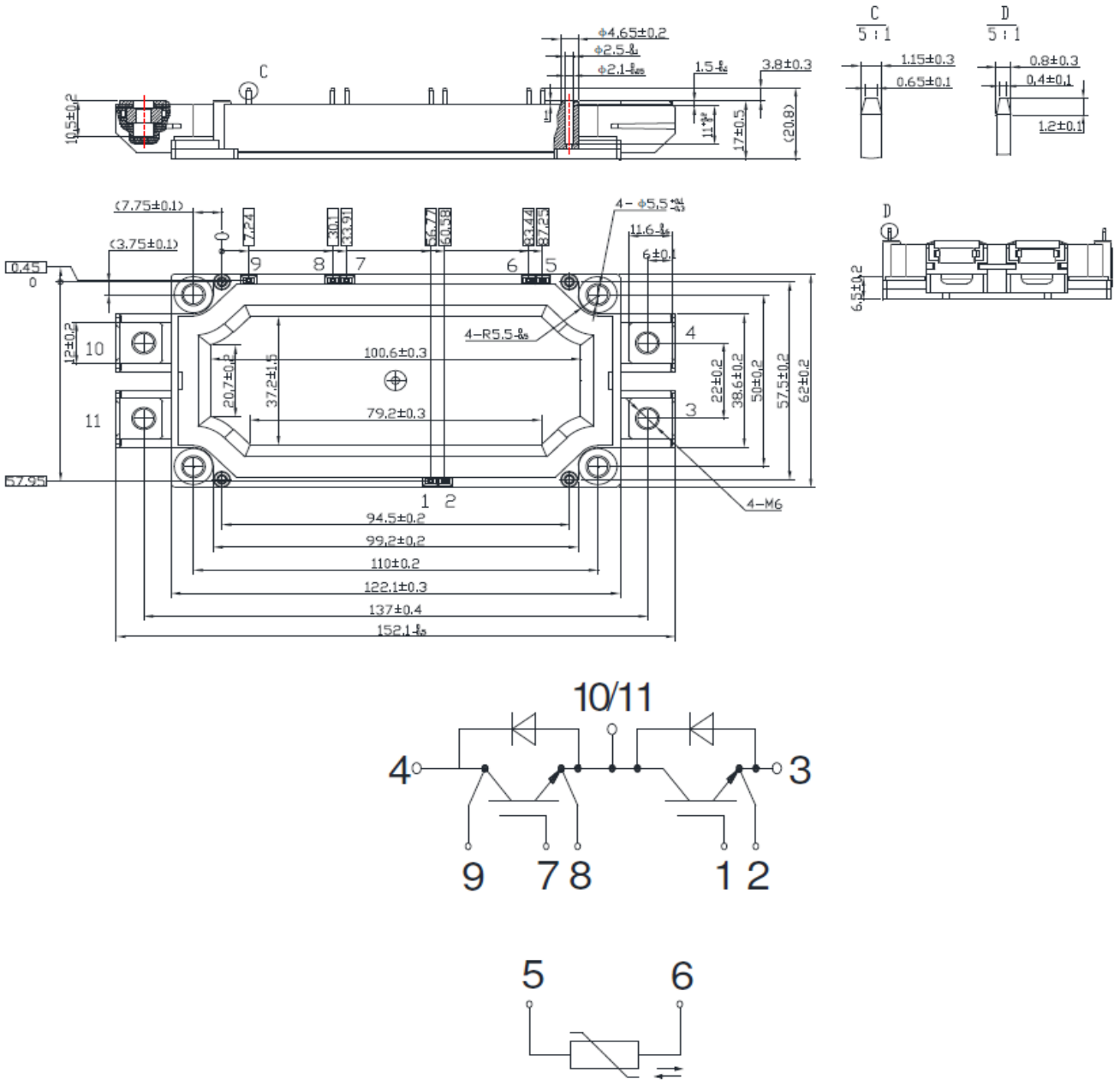
Outline:



(dimensions in mm)

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