

MRI150.17

2 in 1 IGBT Modules

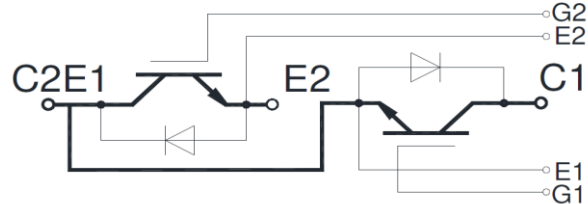


Features:

- High short circuit capability, self limiting short circuit current
- IGBT CHIP (highly rugged SPT+ design)
- VCE(sat) with positive temperature coefficient
- Ultra low loss, high ruggedness
- Free wheeling diodes with fast and soft reverse recovery

Typical applications:

- AC motor control
- Inverter and power supplies
- Motion/servo control
- Photovoltaic/Fuel cell



Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	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	Continuous @ $T_c = 25^\circ\text{C}$, $T_{jmax} = 175^\circ\text{C}$			225	A
		Continuous @ $T_c = 100^\circ\text{C}$, $T_{jmax} = 175^\circ\text{C}$			150	A
I_{CM}	Repetive peak collector current	$T_p = 1\text{ ms}$			300	A
P_C	Collector power dissipation	$T_j = 175^\circ\text{C}$, 1 device			1071	W
T_j	Junction temperature	/	-40		175	$^\circ\text{C}$
T_{stg}	Storage temperature	/	-40		125	$^\circ\text{C}$
V_{ISO}	Isolation between terminal and copper base	$T_j = 25^\circ\text{C}$, AC: 1 minute	4000			V
Screw torque	Mounting (M6)	/	3.0		5.0	N·m
	Terminals (M6)	/	2.5		5.0	N·m
I_{CES}	Zero gate voltage collector current	$T_j = 25^\circ\text{C}$, $V_{CE} = V_{CES}$, $V_{GE} = 0\text{V}$			1	mA
		$T_j = 150^\circ\text{C}$, $V_{CE} = V_{CES}$, $V_{GE} = 0\text{V}$			10	mA
I_{GES}	Gate-Emitter leakage current	$T_j = 25^\circ\text{C}$, $V_{CE} = 0\text{V}$, $V_{GE} = \pm 15\text{V}$	-500		500	nA
$V_{GE(th)}$	Gate-Emitter threshold voltage	$V_{CE} = V_{GE}$, $I_C = 6\text{mA}$	5.4	6.2	7.4	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	$T_j = 25^\circ\text{C}$, $V_{GE} = 15\text{V}$, $I_C = 150\text{A}$		2.30	2.70	V
		$T_j = 125^\circ\text{C}$, $V_{GE} = 15\text{V}$, $I_C = 150\text{A}$		2.65		V
		$T_j = 150^\circ\text{C}$, $V_{GE} = 15\text{V}$, $I_C = 150\text{A}$		2.70		V
C_{ies}	Input capacitance	$T_j = 25^\circ\text{C}$, $V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$		10.2		nF
t_{on}	Turn-on time	$V_{CC} = 900\text{V}$, $I_C = 150\text{A}$, $V_{GE} = \pm 15\text{V}$, $R_G = 7.5\Omega$, inductive load	$T_j = 25^\circ\text{C}$		255	ns
			$T_j = 150^\circ\text{C}$		280	ns
			$T_j = 25^\circ\text{C}$		105	ns
			$T_j = 150^\circ\text{C}$		110	ns
t_{off}	Turn-off time	$V_{CC} = 900\text{V}$, $I_C = 150\text{A}$, $V_{GE} = \pm 15\text{V}$, $R_G = 7.5\Omega$, inductive load	$T_j = 25^\circ\text{C}$		630	ns
			$T_j = 150^\circ\text{C}$		830	ns
			$T_j = 25^\circ\text{C}$		180	ns
			$T_j = 150^\circ\text{C}$		310	ns
V_F	Forward on voltage	$T_j = 25^\circ\text{C}$, $I_F = 150\text{A}$		1.75	2.30	V
		$T_j = 125^\circ\text{C}$, $I_F = 150\text{A}$		1.85		V
		$T_j = 150^\circ\text{C}$, $I_F = 150\text{A}$		1.90		V
t_{rr}	Reverse recovery time	$T_j = 150^\circ\text{C}$, $I_F = 150\text{A}$		950		ns
$R_{th(j-c)}$	Thermal resistance (1 device)	IGBT			0.14	$^\circ\text{C/W}$
		FWD			0.24	$^\circ\text{C/W}$
W_t	Weight				300	g
Outline	454H3P					

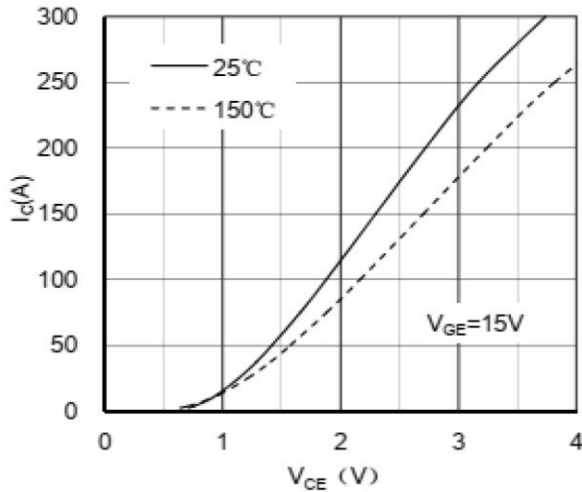


Figure 1. Typical Output Characteristics IGBT-inverter

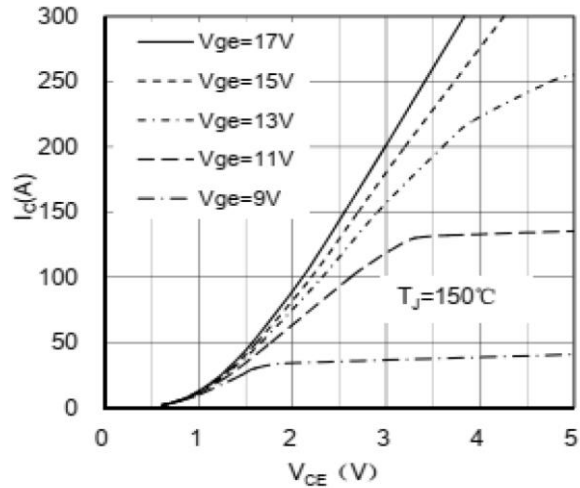


Figure 2. Typical Output Characteristics IGBT-inverter

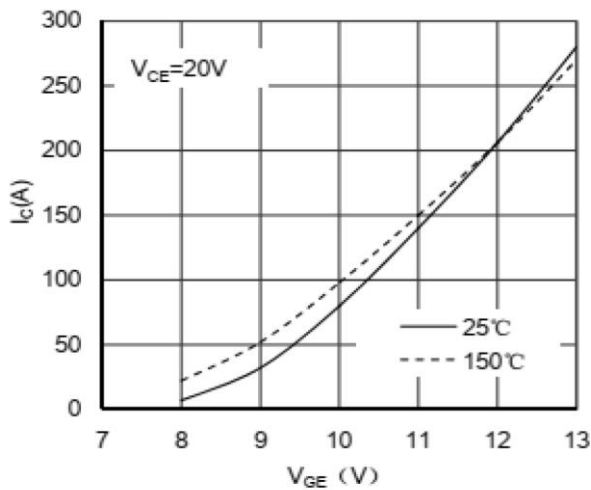


Figure 3. Typical Transfer characteristics IGBT-inverter

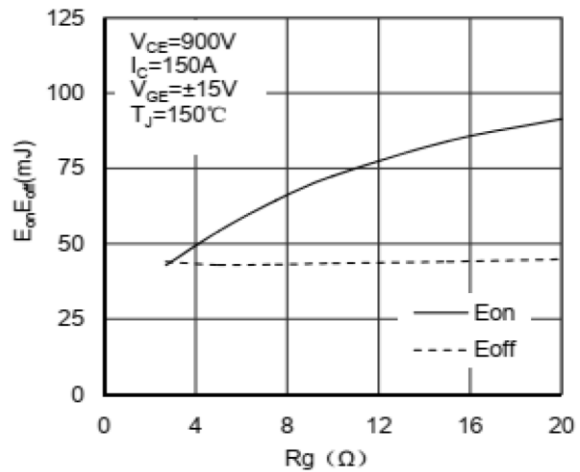


Figure 4. Switching Energy vs Gate Resistor IGBT-inverter

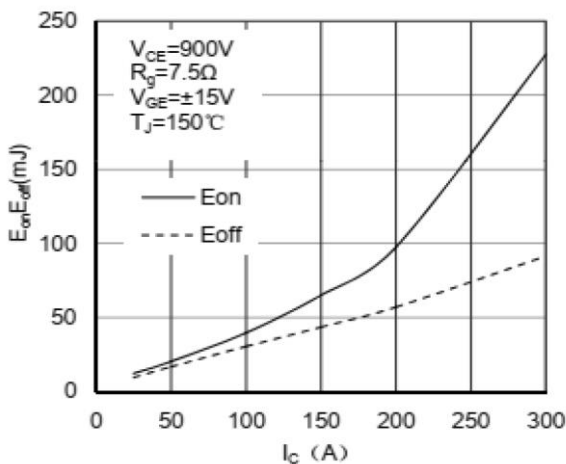


Figure 5. Switching Energy vs Collector Current IGBT-inverter

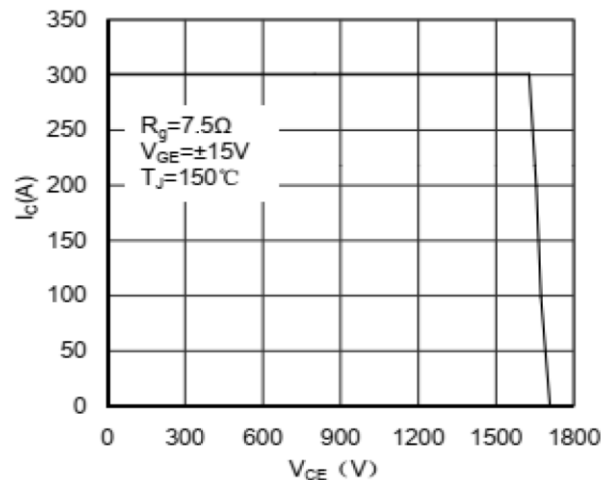


Figure 6. Reverse Biased Safe Operating Area IGBT-inverter

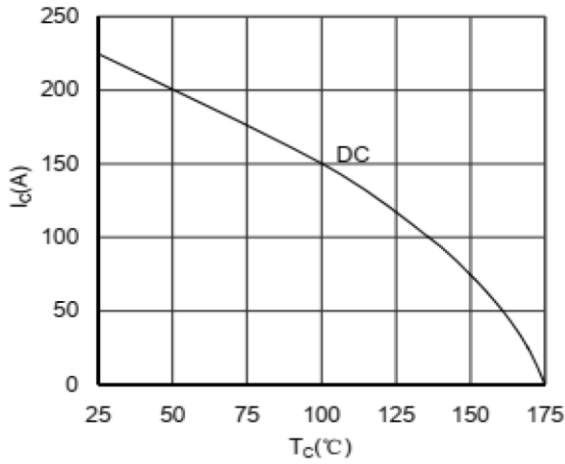


Figure 7. Collector Current vs Case temperature IGBT-inverter

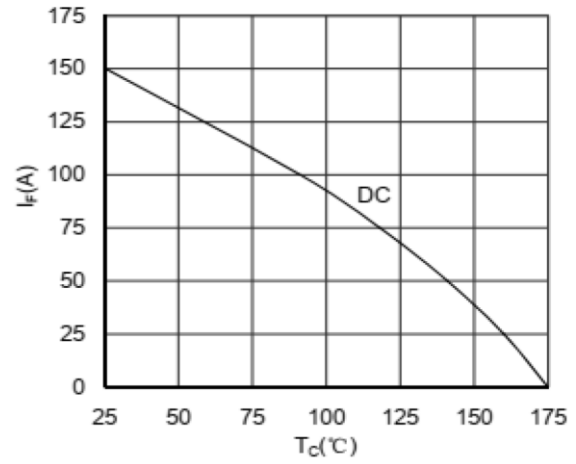


Figure 8. Forward current vs Case temperature Diode-inverter

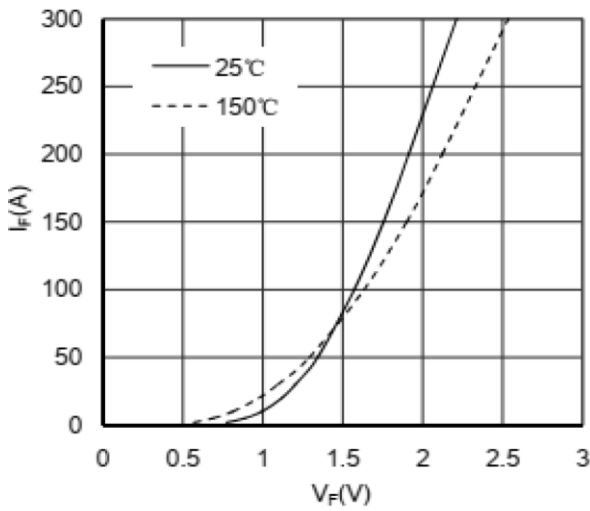


Figure 9. Diode Forward Characteristics Diode-inverter

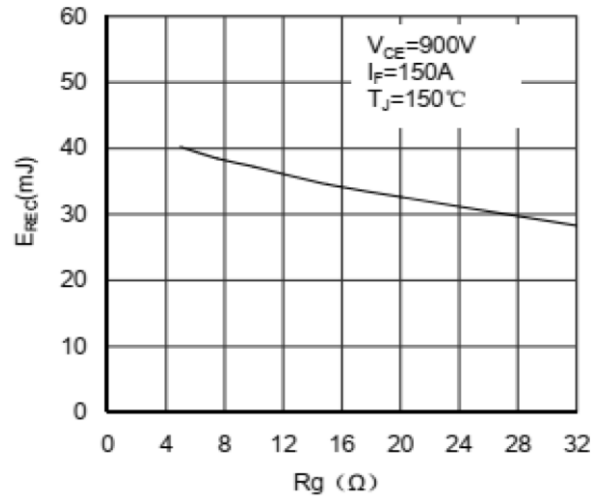


Figure 10. Switching Energy vs Gate Resistor Diode-inverter

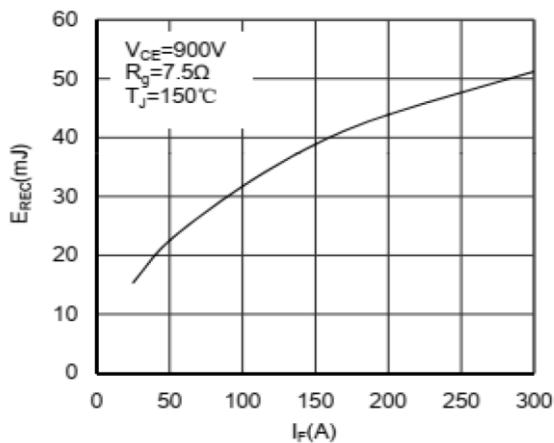


Figure 11. Switching Energy vs Forward Current Diode-inverter

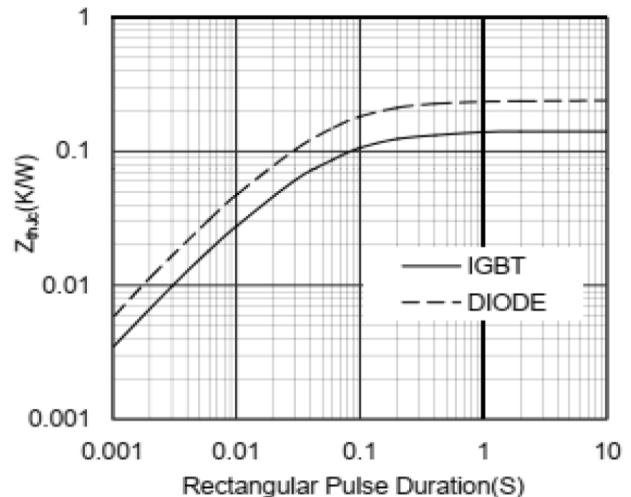
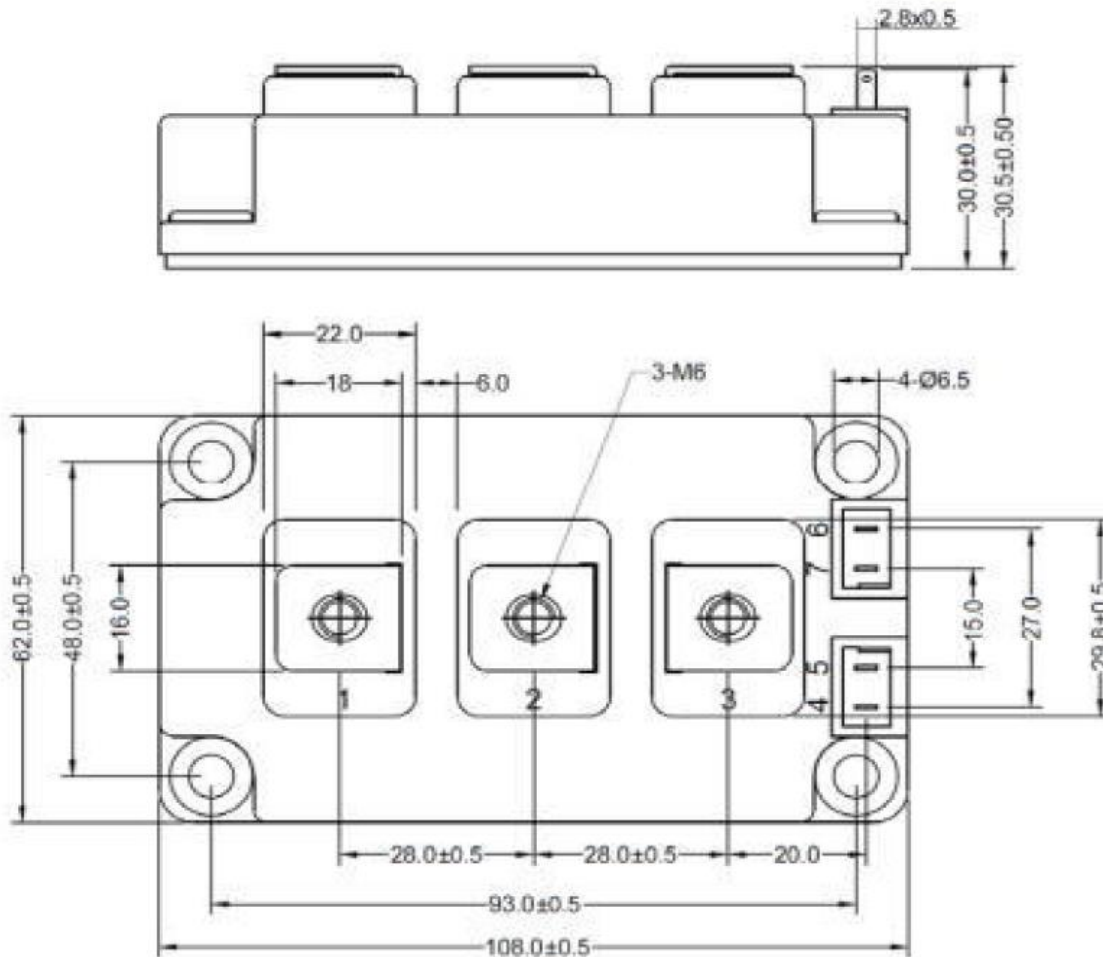


Figure 12. Transient Thermal Impedance of Diode and IGBT-inverter

Outline:



(dimensions in mm)

S.CO.M.E.S. Srl

Via Enrico Mattei, 6/8 - 26283 - Castiglione d'Adda (LO) - Italy

Phone: +39 0377 901243 Fax: +39 0377 900206