MRI450.12-E

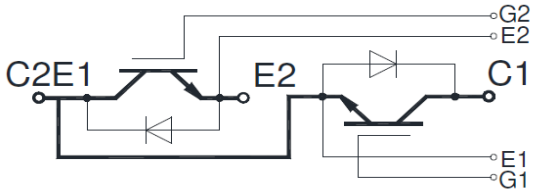
2 in 1 IGBT Modules

Features:

- Low V_{CEsat}
- Standard housing

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				1200	V
V_{GES}	Gate-Emitter voltage	Tj = 25°C				±20	V
I_C	Collector current	Continuous @ T_c = 80 °C				450	A
I_{CM}	Repetive peak collector current	T_p = 1 ms				900	A
P_C	Collector power dissipation	Tj = 25°C, 1 device				2100	W
T_j	Junction temperature	/		-40		125	°C
T_{stg}	Storage temperature	/		-40		125	°C
V_{ISO}	Isolation between terminal and copper base	Tj = 25°C, AC: 1 minute		2500			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				0.40	μA
$V_{GE(th)}$	Gate-Emitter threshold voltage	Tj = 25°C, V_{CE} = 20V, I_C = 18mA		5.0	5.8	6.5	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	Tj = 25°C, V_{GE} = 15V, I_C = 450A			1.70	2.15	V
		Tj = 125°C, V_{GE} = 15V, I_C = 450A			2.00		V
R_{Gint}	Internal gate resistor	Tj = 25°C			1.70		Ω
C_{ies}	Input capacitance	Tj = 25°C, V_{CE} = 25V, V_{GE} = 0V, f = 1MHz			32.0		nF
C_{res}	Reverse transfer capacitance				1.50		nF
t_{on}	Turn-on time	V_{CC} = 600V, I_C = 450A, V_{GE} = ±15V, R_G = 1.6Ω, inductive load	Tj = 25°C		250		ns
			Tj = 125°C		300		ns
t_r			Tj = 25°C		90		ns
			Tj = 125°C		100		ns
t_{off}	Turn-off time	V_{CC} = 600V, I_C = 450A, V_{GE} = ±15V, R_G = 1.6Ω, inductive load	Tj = 25°C		550		ns
			Tj = 125°C		650		ns
t_f			Tj = 25°C		130		ns
			Tj = 125°C		160		ns
E_{on}	Turn-on energy loss per pulse	V_{CC} = 600V, I_C = 450A, Ls = 80nH, V_{GE} = ±15V, di/dt = 7800A/μs, R_{gon} = 1.6Ω	Tj = 25°C		22		mJ
			Tj = 125°C		33		mJ
E_{off}	Turn-off energy loss per pulse	V_{CC} = 600V, I_C = 450A, Ls = 80nH, V_{GE} = ±15V, dV/dt = 3600V/μs, R_{goff} = 1.6Ω	Tj = 25°C		43		mJ
			Tj = 125°C		65		mJ
I_{SC}	Short circuit	Tj = 125°C, V_{CC} = 900V, V_{GE} ≤ 15V			1800		A
V_F	Forward on voltage	I_F = 450A	Tj = 25°C		1.65	2.15	V
			Tj = 125°C		1.65		V
t_{rr}	Reverse recovery time	I_F = 450A	Tj = 25°C		150		μs
			Tj = 125°C		210		μs

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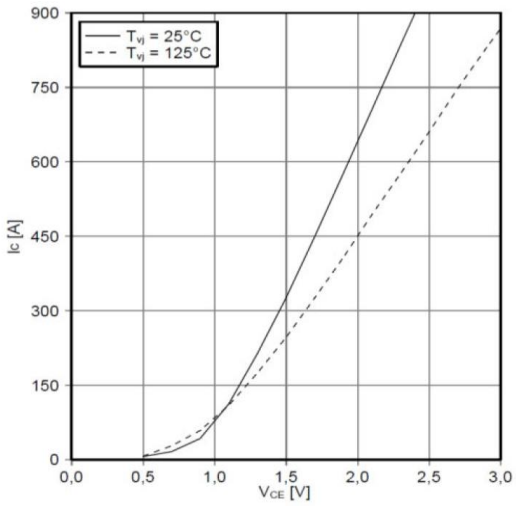
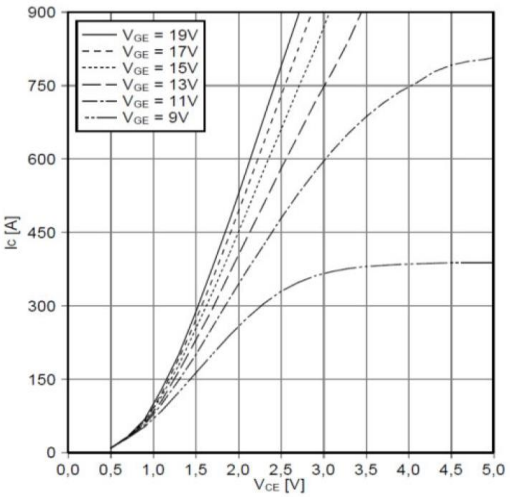
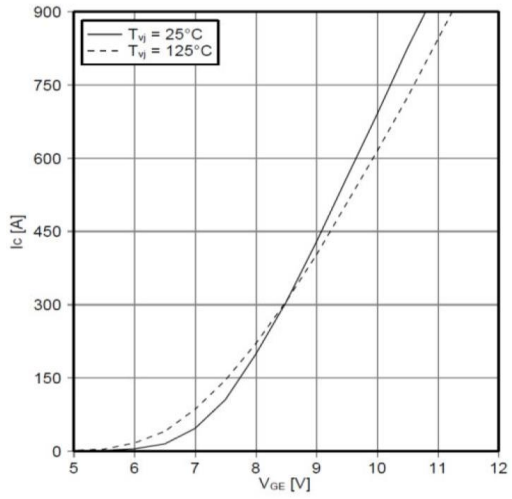
Symbol	Characteristcs	Test Conditions	Value			Unit
			Min	Typ	Max	
$R_{th(j-c)}$	Thermal resistance (1 device)	IGBT			0.06	°C/W
		FWD			0.10	°C/W
$R_{th(j-c)}$	Thermal resistance, case to heatsink	per module		0.009		°C/W
		IGBT		0.030		°C/W
		FWD		0.050		°C/W
R_{25}	Rated resistance	Tc = 25°C		5.0		kΩ
ΔR/R	Deviation of R100	Tc = 100°C, R_{100}=493Ω	-5		5	%
P_{25}	Power dissipation	Tc = 25°C			20	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
L_{sCE}	Stray inductance module			20		mH
$R_{CC'+EE'}$	Module lead resistance, terminals - chip	Tc = 25°C, per switch		1.10		mΩ
W_t	Weight				345	g
Outline	454H3P					



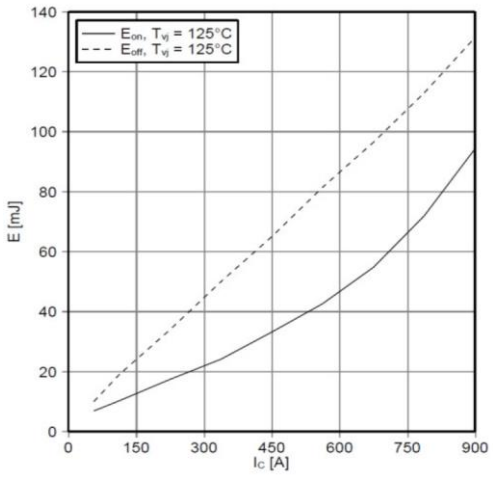
output characteristic IGBT,Inverter (typical)



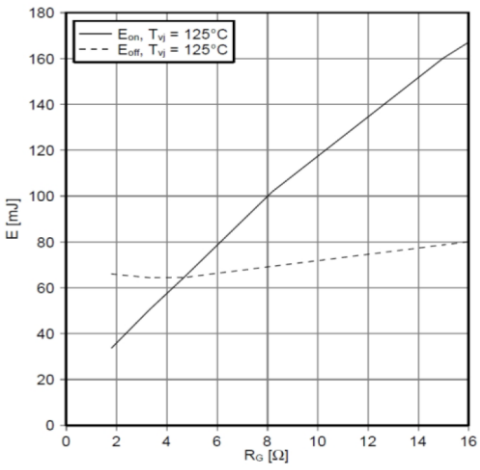
output characteristic IGBT,Inverter (typical)



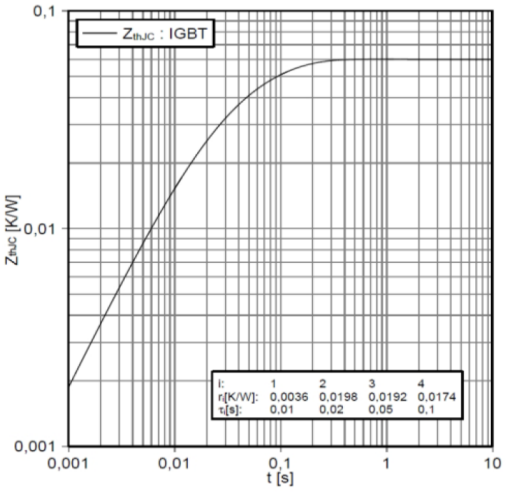
transfer characteristic IGBT,Inverter(typical)



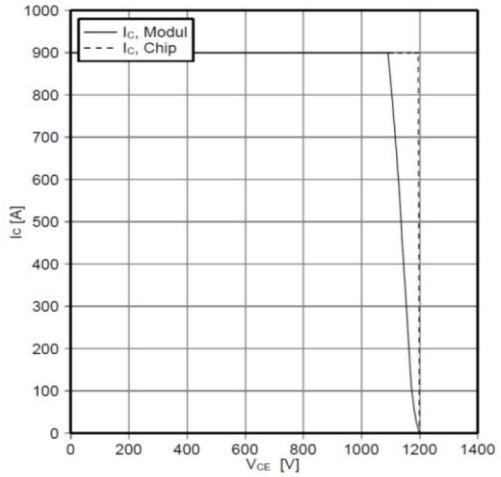
switching losses IGBT,Inverter (typical)



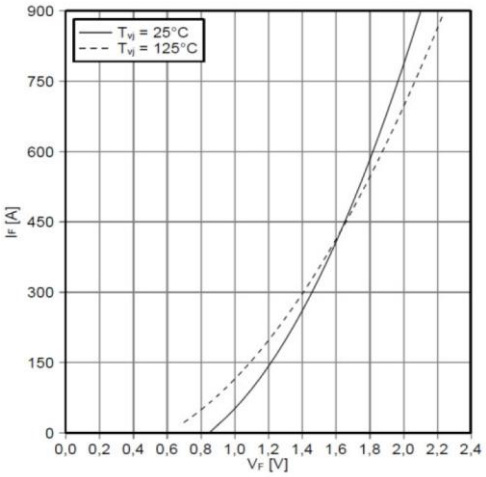
switching losses IGBT,Inverter (typical)



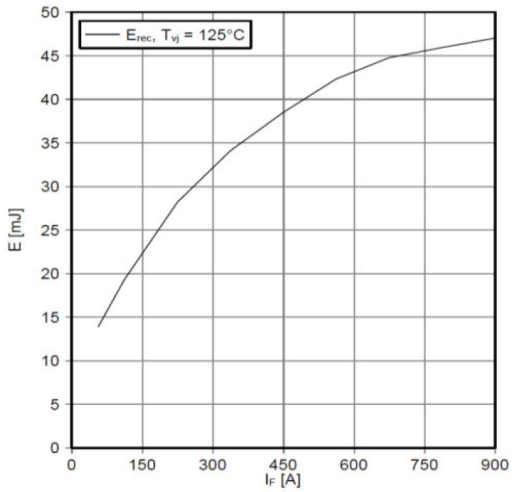
transient thermal impedance IGBT,Inverter



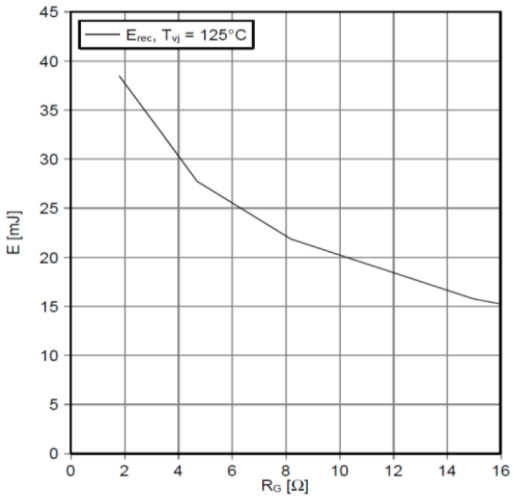
reverse bias safe operating area IGBT,Inverter (RBSOA)



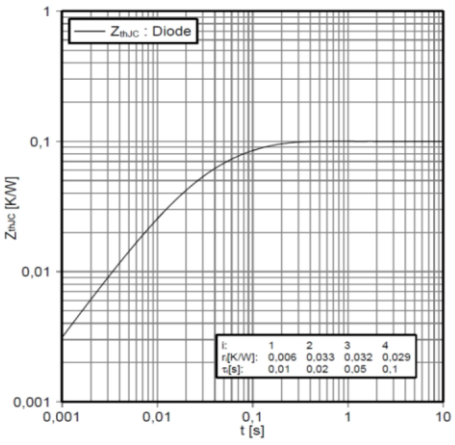
forward characteristic of Diode, Inverter (typical)



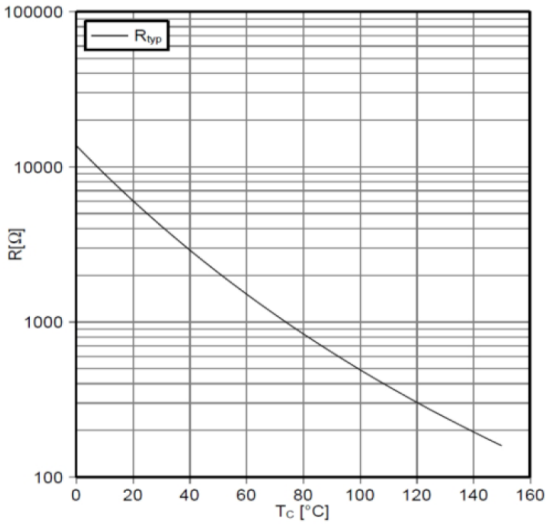
switching losses Diode, Inverter (typical)



switching losses Diode, Inverter (typical)



transient thermal impedance Diode, Inverter



NTC- Thermistor- temperature characteristic (typical)

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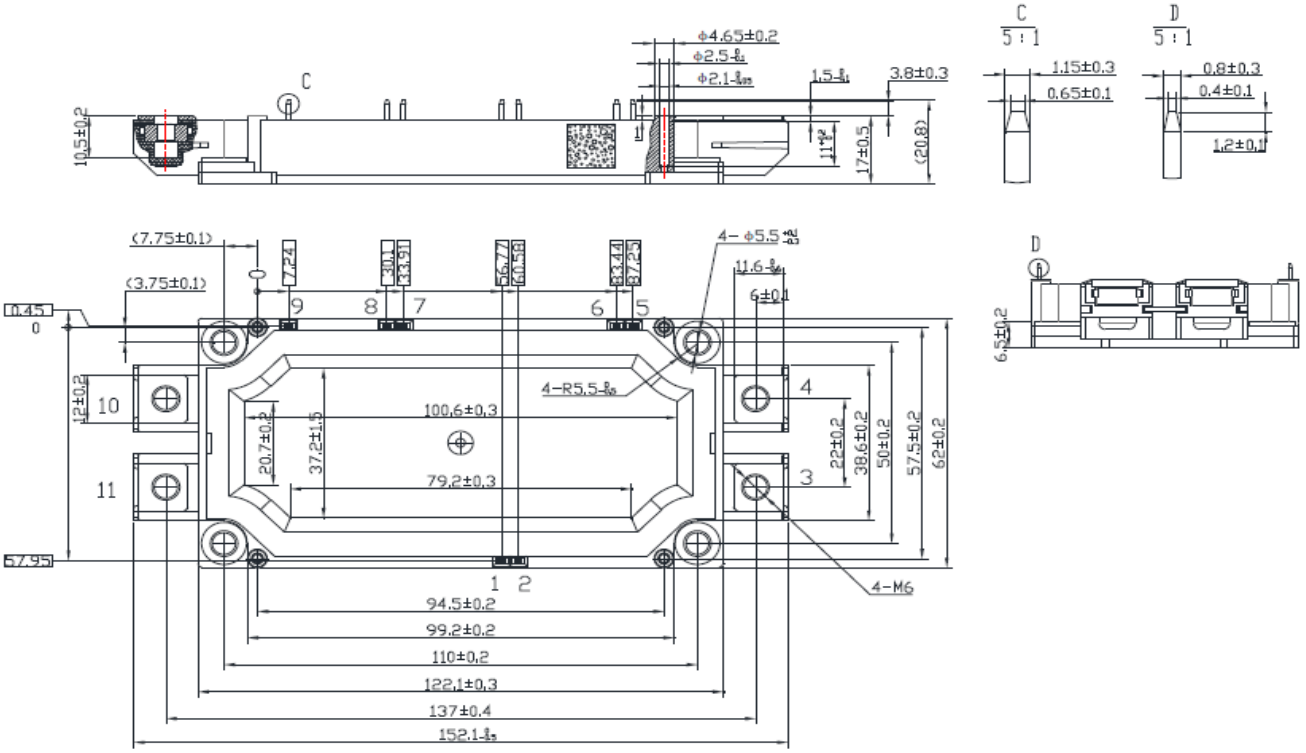
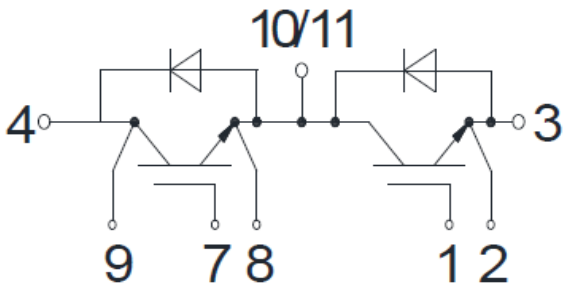
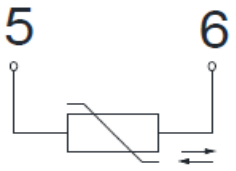
Outline:







(dimensions in mm)

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