

## MRI600.12-E

### 2 in 1 IGBT Modules

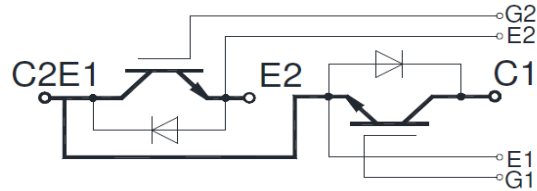


#### Features:

- Low  $V_{CEsat}$
- Standard housing

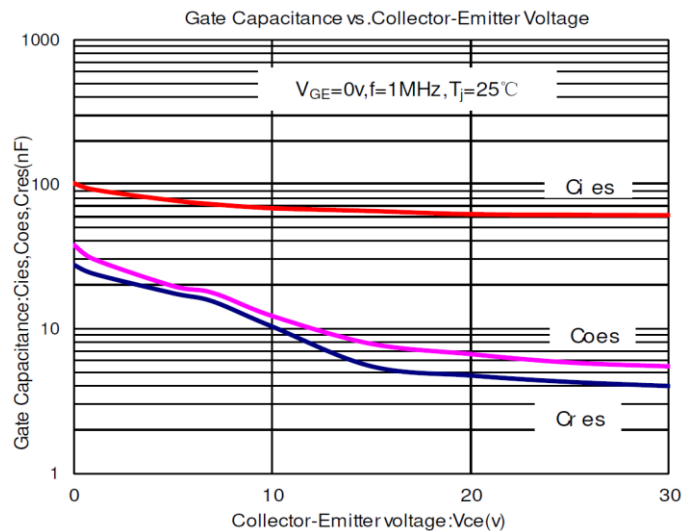
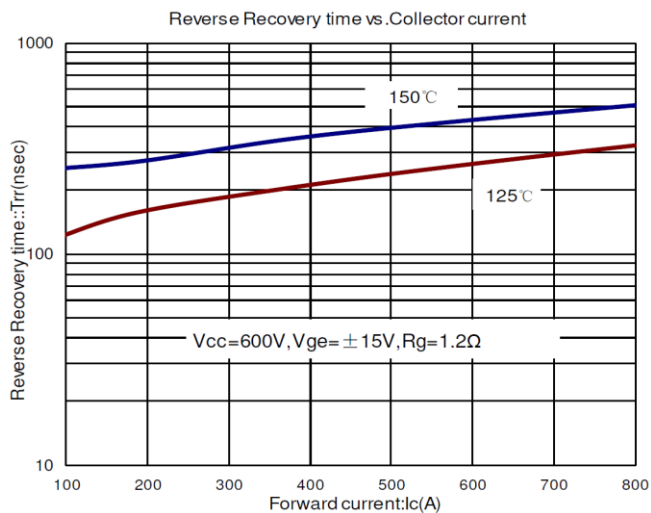
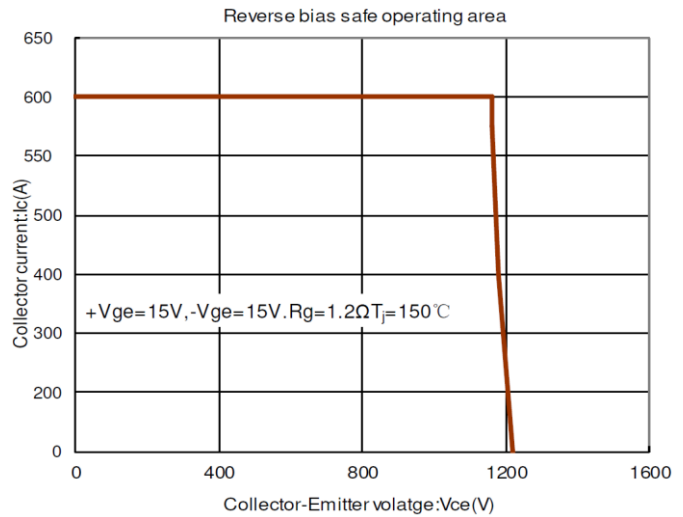
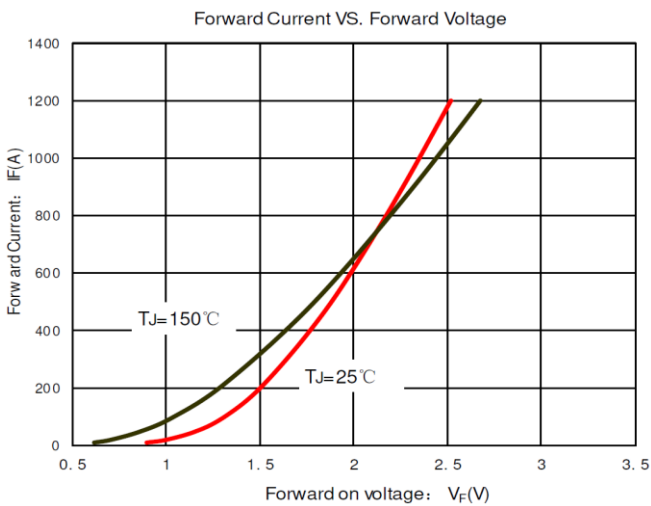
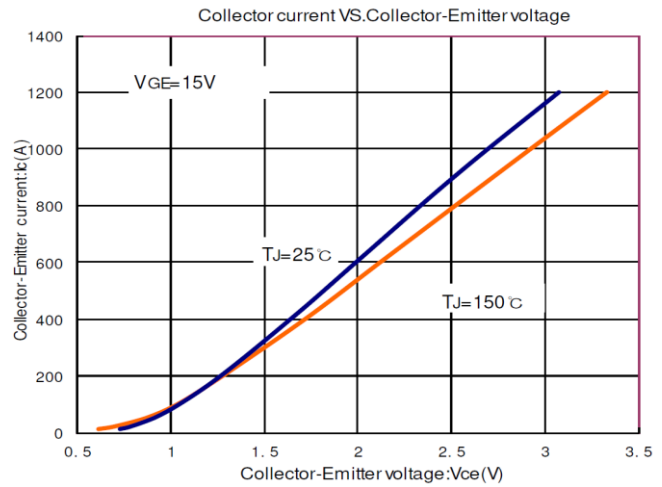
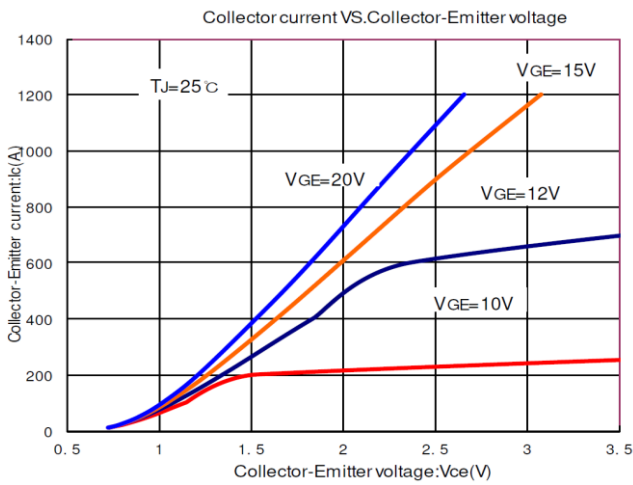
#### Typical applications:

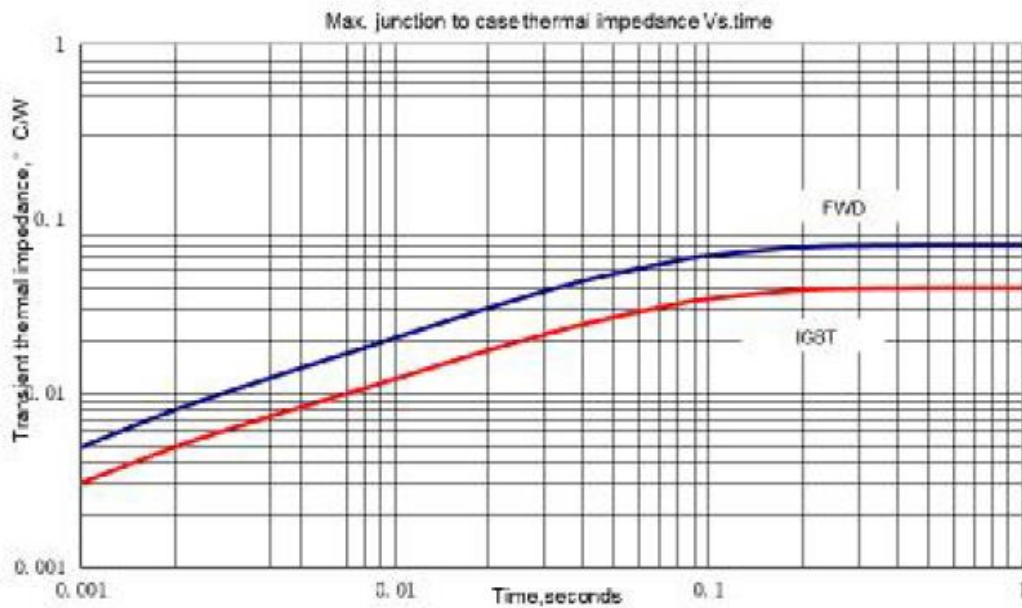
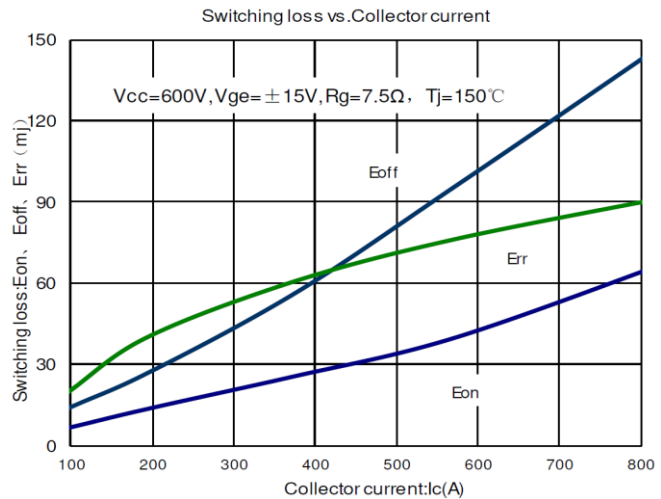
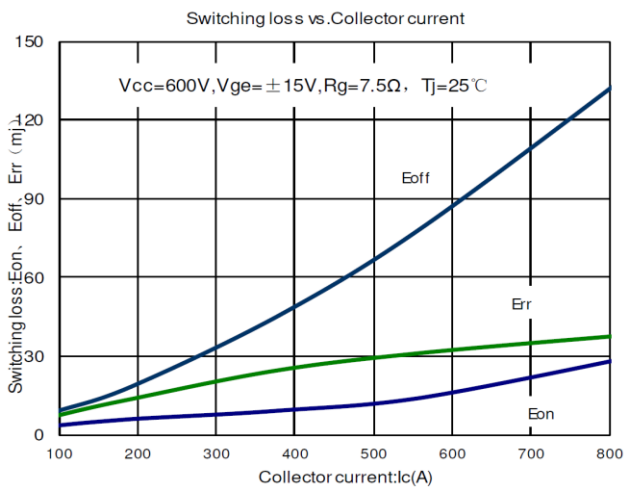
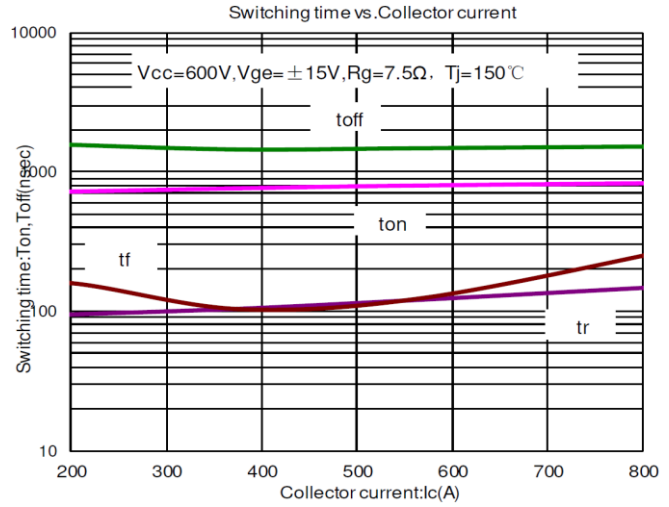
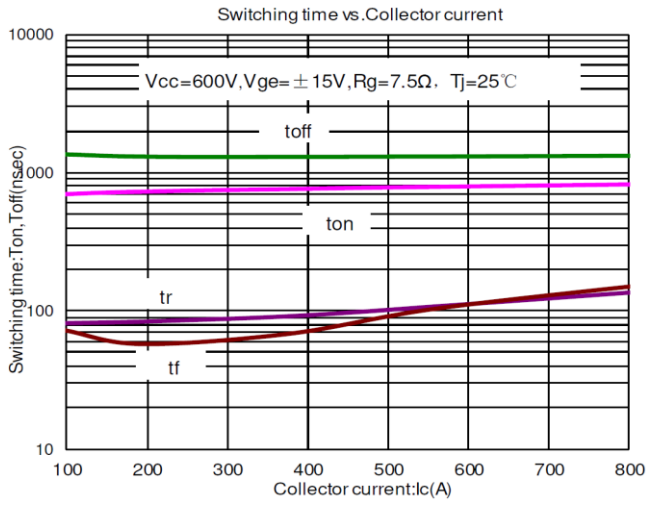
- AC motor control
- Inverter and power supplies
- Motion/servo control
- Photovoltaic/Fuel cell
- Uninterruptible Power Supply System



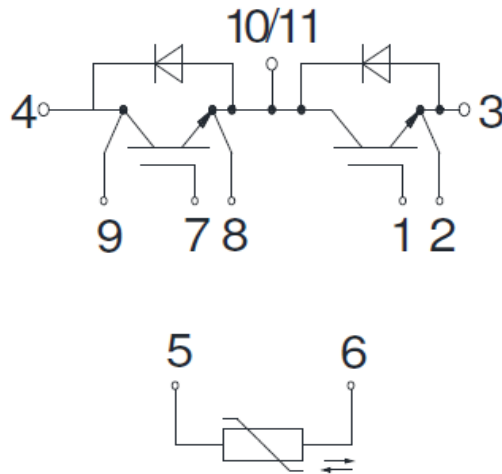
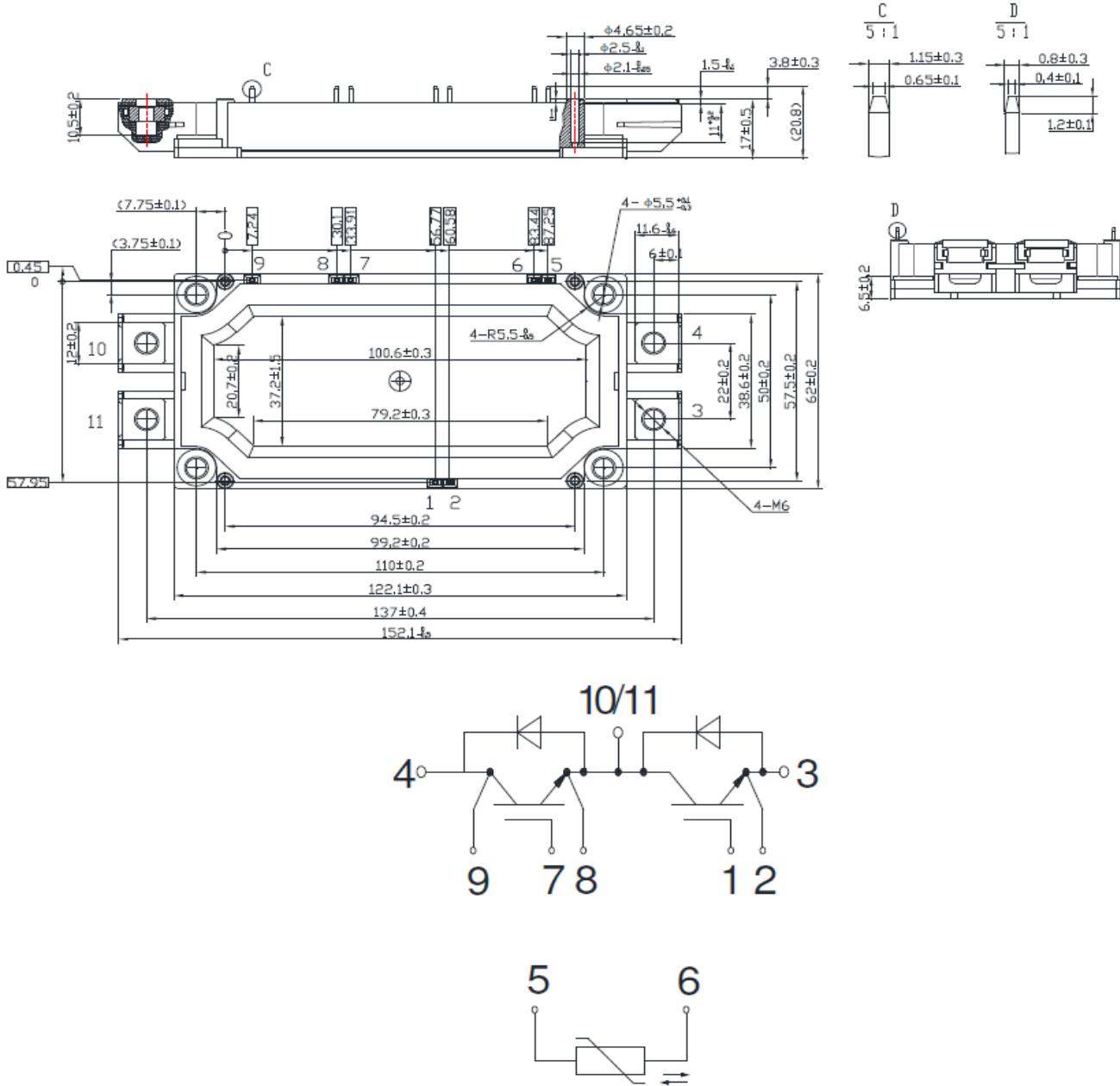
Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
$V_{CES}$	Collector-Emitter voltage	$T_j = 25^\circ\text{C}$			1200	V
$V_{GES}$	Gate-Emitter voltage	$T_j = 25^\circ\text{C}$			$\pm 30$	V
$I_C$	Collector current	Continuous @ $T_c = 100^\circ\text{C}$			600	A
$I_{CM}$	Repetive peak collector current	$T_p = 1\text{ ms}$			1200	A
$P_C$	Collector power dissipation	$T_j = 125^\circ\text{C}$ , 1 device			4050	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	3000			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	$T_j = 25^\circ\text{C}$ , $V_{CE} = V_{CES}$ , $V_{GE} = 0\text{V}$			1.5	mA
$I_{GES}$	Gate-Emitter leakage current	$T_j = 25^\circ\text{C}$ , $V_{CE} = 0\text{V}$ , $V_{GE} = \pm 20\text{V}$			$\pm 0.5$	$\mu\text{A}$
$V_{GE(th)}$	Gate-Emitter threshold voltage	$T_j = 25^\circ\text{C}$ , $V_{CE} = 20\text{V}$ , $I_C = 150\text{mA}$	4.5		8.5	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	$T_j = 25^\circ\text{C}$ , $V_{GE} = 15\text{V}$ , $I_C = 600\text{A}$		2.00	2.40	V
		$T_j = 125^\circ\text{C}$ , $V_{GE} = 15\text{V}$ , $I_C = 600\text{A}$		2.10		V
		$T_j = 150^\circ\text{C}$ , $V_{GE} = 15\text{V}$ , $I_C = 600\text{A}$		2.20		V
$Q_G$	Gate charge	$V_{GE} = \pm 15\text{V}$		4.40		$\mu\text{C}$
$R_{Gint}$	Internal gate resistor	$T_j = 25^\circ\text{C}$		1.20		$\Omega$
$C_{ies}$	Input capacitance	$T_j = 25^\circ\text{C}$ , $V_{CE} = 10\text{V}$ , $V_{GE} = 0\text{V}$ , $f = 1\text{MHz}$		66.6		nF
$C_{res}$	Reverse transfer capacitance			10.4		nF
$t_{on}$	Turn-on time				800	
$t_r$		$T_j = 150^\circ\text{C}$ , $V_{CC} = 600\text{V}$ , $I_C = 600\text{A}$ , $V_{GE} = \pm 15\text{V}$ , $R_G = 7.5\Omega$ , inductive load		120		ns
$t_{off}$			Turn-off time		1400	
$t_f$				130		ns
$E_{on}$	Turn-on energy loss per pulse	$V_{CE} = 600\text{V}$ , $I_C = 600\text{A}$ , $L_s = 20\text{nH}$ , $V_{GE} = \pm 15\text{V}$ , $di/dt = 5100\text{A}/\mu\text{s}$ ( $T_{VJ}$ 0 150 $^\circ\text{C}$ ), $R_{gon} = 7.5\Omega$		44.0		mJ
$E_{off}$	Turn-off energy loss per pulse			105.0		mJ
$I_{sc}$	Short circuit	$V_{CC} = 720\text{V}$ , $V_{GE} \leq 15\text{V}$ , $T_{VJ} = 150^\circ\text{C}$ , $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$ , $t_p \leq 10\mu\text{s}$		2400		A
$t_{sc}$	Short circuit withstand time	$T_j = 150^\circ\text{C}$ , $V_{CC} = 720\text{V}$ , $V_{GE} = \pm 15\text{V}$ , $R_G = 7.5\Omega$	10			$\mu\text{s}$

Symbol	Characteristics	Test Conditions	Value			Unit
			Min	Typ	Max	
$V_F$	Forward on voltage	$T_j = 25^\circ\text{C}, I_F = 600\text{A}$		2.00	2.48	V
		$T_j = 125^\circ\text{C}, I_F = 600\text{A}$		1.95		V
		$T_j = 150^\circ\text{C}, I_F = 600\text{A}$		1.90		V
$I_{RM}$	Peak reverse recovery current	$I_F = 600\text{A}, -diF/dt = 5100\text{ A}/\mu\text{s} (T_{VJ} = 150^\circ\text{C}), V_R = 600\text{V}, V_{GE} = -15\text{V}, T_j = 150^\circ\text{C}$		450		A
$Q_R$	Recovery charge	$I_F = 600\text{A}, -diF/dt = 5100\text{ A}/\mu\text{s} (T_{VJ} = 150^\circ\text{C}), V_R = 600\text{V}, V_{GE} = -15\text{V}, T_j = 150^\circ\text{C}$		130		$\mu\text{C}$
$E_{rec}$	Reverse recovery energy	$I_F = 600\text{A}, -diF/dt = 5100\text{ A}/\mu\text{s} (T_{VJ} = 150^\circ\text{C}), V_R = 600\text{V}, V_{GE} = -15\text{V}, T_j = 150^\circ\text{C}$		51.0		mJ
$t_{rr}$	Reverse recovery time	$T_j = 150^\circ\text{C}, I_F = 600\text{A}$		250		ns
$R_{th(j-c)}$	Thermal resistance (1 device)	IGBT			0.04	$^\circ\text{C}/\text{W}$
		FWD			0.07	$^\circ\text{C}/\text{W}$
$R_{th(c-f)}$	Contact thermal resistance (1 device)	with thermal compound		0.050		$^\circ\text{C}/\text{W}$
$R_{25}$	Rated resistance	$T_{VJ} = 25^\circ\text{C}$		5.0		k $\Omega$
$\Delta R/R$	Deviation of R100	$T_c = 100^\circ\text{C}, R_{100} = 493\Omega$	-5		5	%
$P_{25}$	Power dissipation	$T_c = 25^\circ\text{C}$		20		mW
$B_{25/50}$	B-value	$R_2 = R_{25} \exp [B_{25/50} (1/T_2 - 1/(298,15\text{ K}))]$		3375		K
$B_{25/80}$	B-value	$R_2 = R_{25} \exp [B_{25/80} (1/T_2 - 1/(298,15\text{ K}))]$		3411		K
$B_{25/100}$	B-value	$R_2 = R_{25} \exp [B_{25/100} (1/T_2 - 1/(298,15\text{ K}))]$		3433		K
$W_t$	Weight				345	g
Outline	465H3					





### Outline:



(dimensions in mm)

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