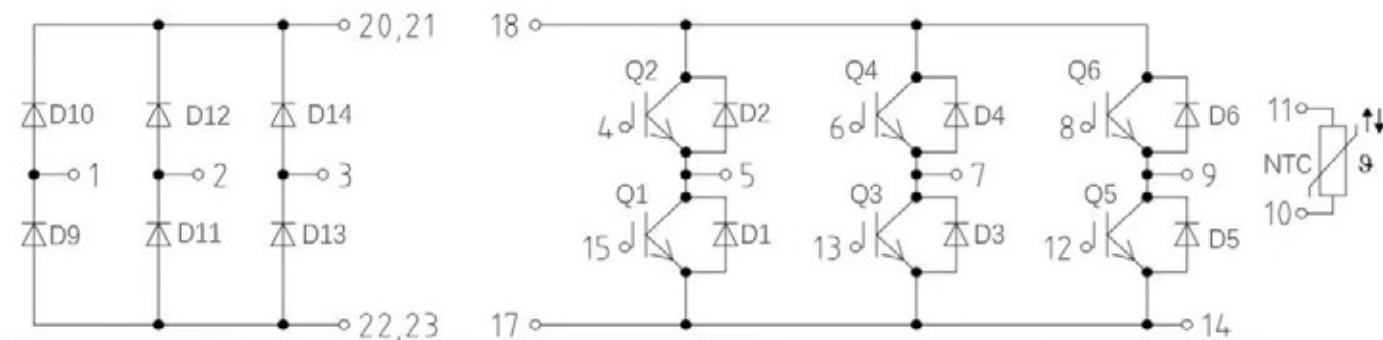
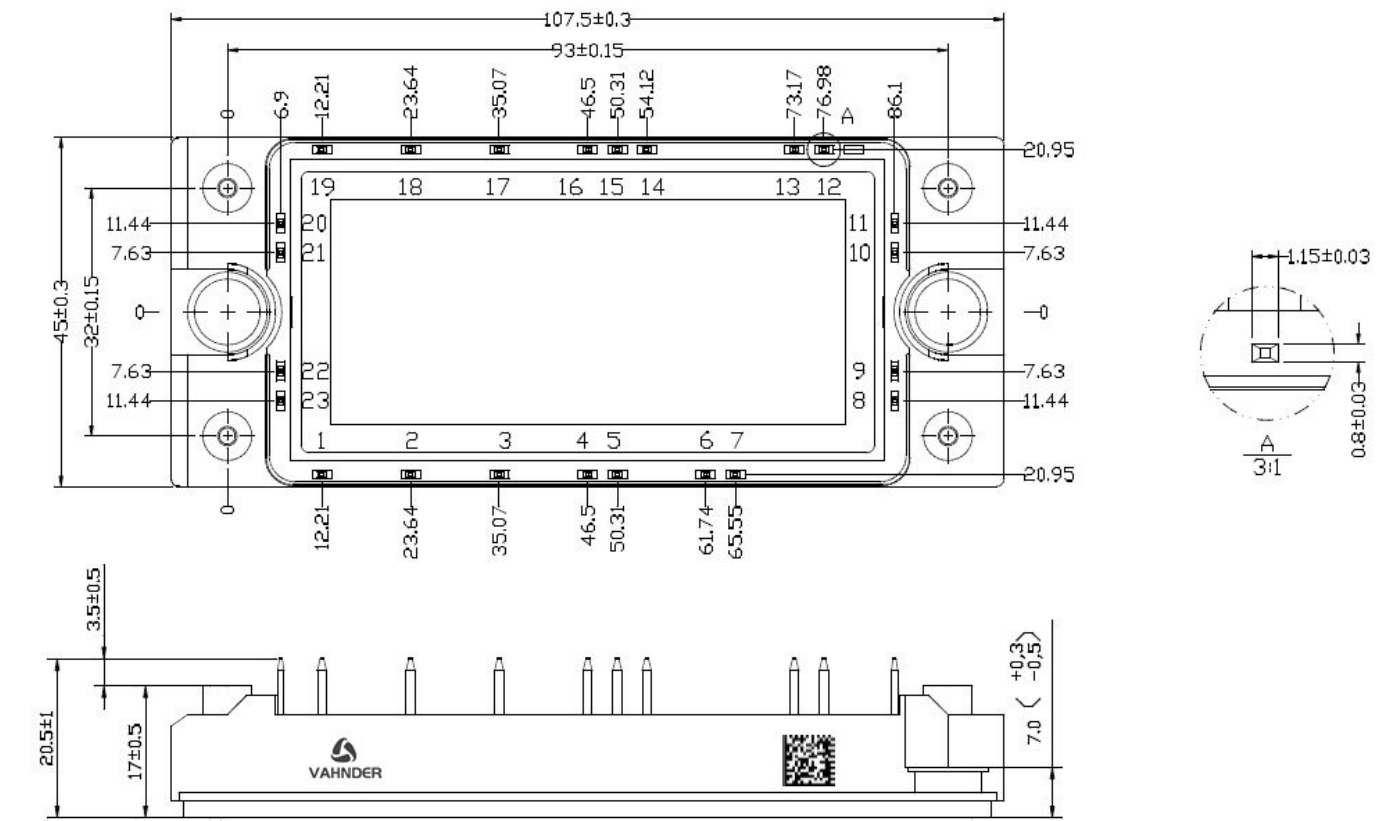


Circuit Diagram



Package outlines



IGBT, Brake-Chopper

Maximum Rated Values

Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	1200	V
Continuous DC collector current	$T_C = 100^{\circ}\text{C}$, $T_{vj} \text{ max} = 150^{\circ}\text{C}$	$I_{C \text{ nom}}$	50	A
Repetitive peak collector current	$t_p = 1 \text{ ms}$	I_{CRM}	100	A
Total power dissipation	$T_C = 25^{\circ}\text{C}$, $T_{vj} \text{ max} = 150$	P_{tot}	235	W
Gate-emitter peak voltage		V_{GES}	+/- 20	V

Characteristic value

			min.	typ.	max.	
Collector-emitter saturation voltage	$I_C = 50 \text{ A}$, $V_{GE} = 15 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	$V_{CE, \text{sat}}$	2.10		V
	$I_C = 50 \text{ A}$, $V_{GE} = 15 \text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		2.52		V
	$I_C = 50 \text{ A}$, $V_{GE} = 15 \text{ V}$	$T_{vj} = 150^{\circ}\text{C}$		2.64		V
Gate threshold voltage	$I_C = 1 \text{ mA}$, $V_{CE} = V_{GE}$, $T_{vj} = 25^{\circ}\text{C}$	$V_{GE, \text{th}}$	5.3	5.8	6.3	V
Gate charge	$V_{GE} = -15 \text{ V} \dots +15 \text{ V}$	Q_G		0.47		μC
Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$	R_{Gint}		2.2		Ω
Input capacitance	$f = 1 \text{ MHz}$, $T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$	C_{ies}		0.62		nF
Reverse transfer capacitance	$f = 1 \text{ MHz}$, $T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$	C_{res}		0.08		nF
Collector-emitter cut-off current	$V_{CE} = 1200 \text{ V}$, $V_{GE} = 0 \text{ V}$, $T_{vj} = 25^{\circ}\text{C}$	I_{CES}			1	mA
Gate-emitter leakage current	$V_{CE} = 0 \text{ V}$, $V_{GE} = 20 \text{ V}$, $T_{vj} = 25^{\circ}\text{C}$	I_{GES}			100	nA
Turn-on delay time, inductive load	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	$T_{d, \text{on}}$	0.11		μs
	$V_{GE} = +15/-15 \text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		0.12		μs
	$R_{G, \text{on}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0.12		μs
Rise time, inductive load	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	T_r	0.04		μs
	$V_{GE} = +15/-15 \text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		0.05		μs
	$R_{G, \text{on}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0.05		μs
Turn-off delay time, inductive load	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	$T_{d, \text{off}}$	0.20		μs
	$V_{GE} = +15/-15 \text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		0.22		μs
	$R_{G, \text{off}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0.26		μs
Fall time, inductive load	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	T_f	0.15		μs
	$V_{GE} = +15/-15 \text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		0.32		μs
	$R_{G, \text{off}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		0.36		μs
Turn-on energy loss per pulse	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$, $L_S = 20 \text{ nH}$	$T_{vj} = 25^{\circ}\text{C}$	E_{on}	6.38		mJ
	$V_{GE} = +15/-15 \text{ V}$,	$T_{vj} = 125^{\circ}\text{C}$		8.86		mJ
	$R_{G, \text{on}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		11.28		mJ
Turn-off energy loss per pulse	$I_C = 50 \text{ A}$, $V_{CE} = 600 \text{ V}$, $L_S = 20 \text{ nH}$	$T_{vj} = 25^{\circ}\text{C}$	E_{off}	3.89		mJ
	$V_{GE} = +15/-15 \text{ V}$,	$T_{vj} = 125^{\circ}\text{C}$		4.68		mJ
	$R_{G, \text{off}} = 15 \Omega$	$T_{vj} = 150^{\circ}\text{C}$		6.18		mJ
SC data	$V_{GE} \leq 15 \text{ V}$, $V_{CC} = 600 \text{ V}$, $t_p \leq 8 \mu\text{s}$, $T_{vj} = 150^{\circ}\text{C}$, $R_G = 10 \Omega$, $C_{GE} = 0.0 \mu\text{F}$, $V_{CE, \text{max}} = V_{CES} - L_{SCE} \cdot di/dt$	I_{SC}		200		A

	MG075PA120K0
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Thermal resistance, junction to case	Per IGBT	$R_{th,JC}$			0.53	K/W
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Diode, Brake-Chopper

Maximum Rated Values

Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{RRM}	1200	V
Continuous DC forward current		I_F	50	A
Repetitive peak forward current	$t_p = 1\text{ ms}$	I_{FRM}	100	A

Characteristic value

			min.	typ.	max.	
Forward voltage	$I_F = 50\text{ A}, V_{GE} = 0\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	V_F	1.42		V
	$I_F = 50\text{ A}, V_{GE} = 0\text{ V}$	$T_{vj} = 125^{\circ}\text{C}$		1.45		V
	$I_F = 50\text{ A}, V_{GE} = 0\text{ V}$	$T_{vj} = 150^{\circ}\text{C}$		1.43		V
Peak reverse recovery current	$I_F = 50\text{ A}, V_R = 600\text{ V}$ $V_{GE} = -15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	I_{RM}	38.6		A
		$T_{vj} = 125^{\circ}\text{C}$		41.1		
		$T_{vj} = 150^{\circ}\text{C}$		41.9		
Recovered charge	$I_F = 50\text{ A}, V_R = 600\text{ V}$ $V_{GE} = -15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	Q_r	7.46		μC
		$T_{vj} = 125^{\circ}\text{C}$		12.9		
		$T_{vj} = 150^{\circ}\text{C}$		14.5		
Reverse recovery energy	$I_F = 50\text{ A}, V_R = 600\text{ V}$ $V_{GE} = -15\text{ V}$	$T_{vj} = 25^{\circ}\text{C}$	E_{rec}	2.09		mJ
		$T_{vj} = 125^{\circ}\text{C}$		4.30		
		$T_{vj} = 150^{\circ}\text{C}$		4.31		
Thermal resistance, junction to case	Per diode	$R_{th,JC}$			0.69	K/W

NTC-Thermistor

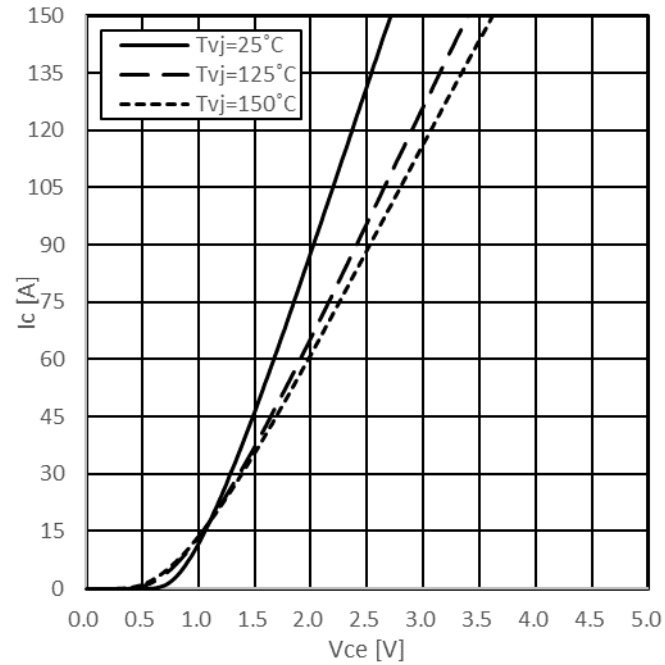
Characteristic value

			min.	typ.	max.	
Rated resistance	$T_c = 25^{\circ}\text{C}$	R_{25}		5.07		$\text{K}\Omega$
Power dissipation	$T_c = 25^{\circ}\text{C}$	P_{25}			240	mW
B-value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298, 15\text{K}))]$	B_{25}/B_{50}		3412.7		K
B-value	$R_2=R_{25}\exp[B_{25/75}(1/T_2-1/(298, 15\text{K}))]$	B_{25}/B_{75}		3454.8		K
B-value	$R_2=R_{25}\exp[B_{25/100}(1/T_2-1/(298, 15\text{K}))]$	B_{25}/B_{100}		3442.2		K

	MG075PA120K0
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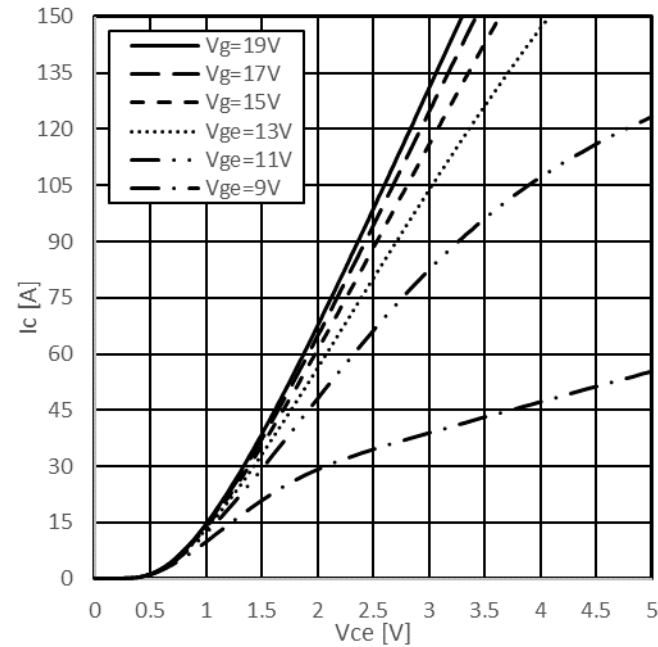
Output characteristic IGBT, Inverter (typical)

$I_c=f(V_{CE})$
 $V_{GE}=15\text{ V}$



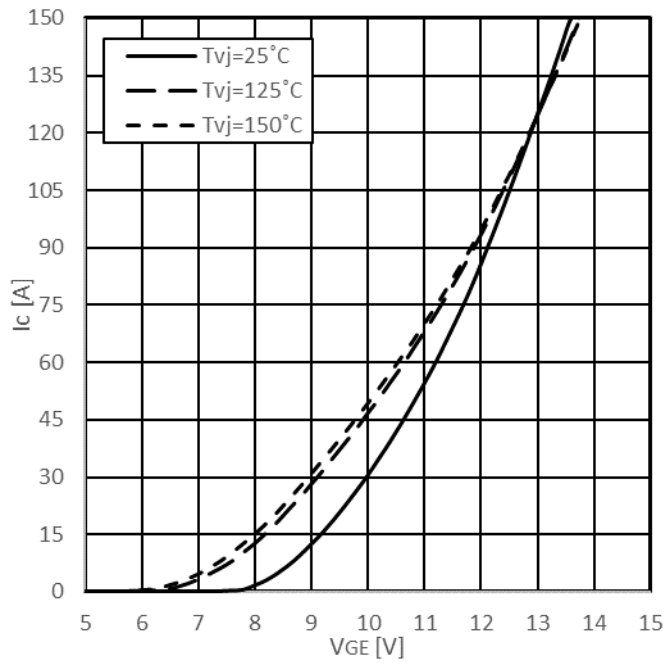
Output characteristic IGBT, Inverter (typical)

$I_c=f(V_{CE})$
 $T_{vj}=150^{\circ}\text{C}$



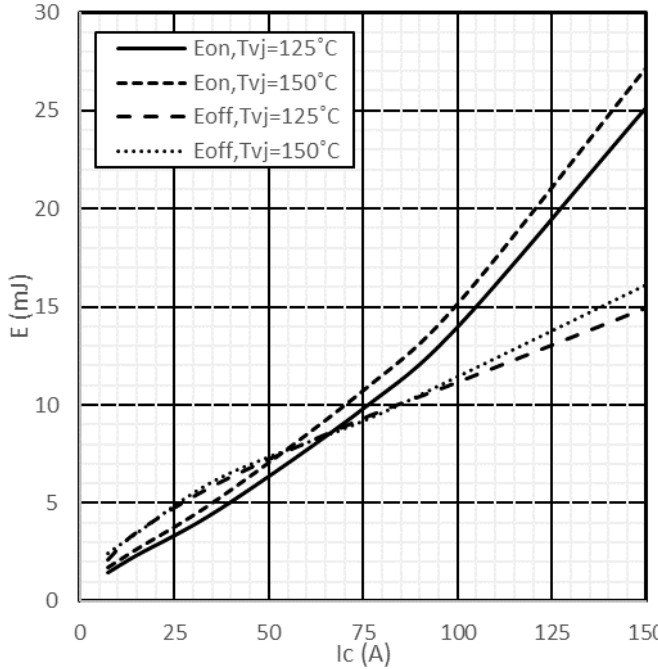
Transfer characteristic IGBT, Inverter (typical)

$I_c=f(V_{GE})$
 $V_{CE}=20\text{ V}$



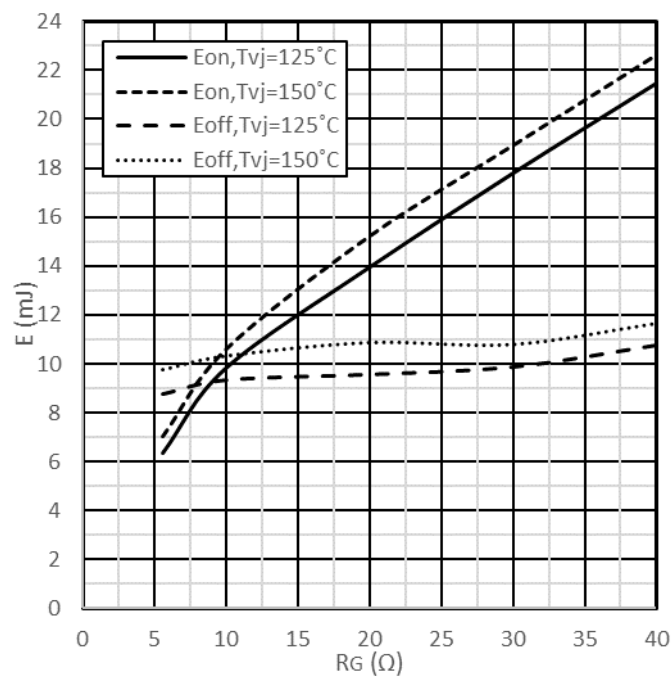
Switching losses IGBT, Inverter (typical)

$E_{on} = f(I_c)$, $E_{off} = f(I_c)$
 $V_{GE} = \pm 15\text{ V}$, $R_{Gon} = 10\Omega$, $R_{Goff} = 10\Omega$, $V_{CE} = 600\text{ V}$



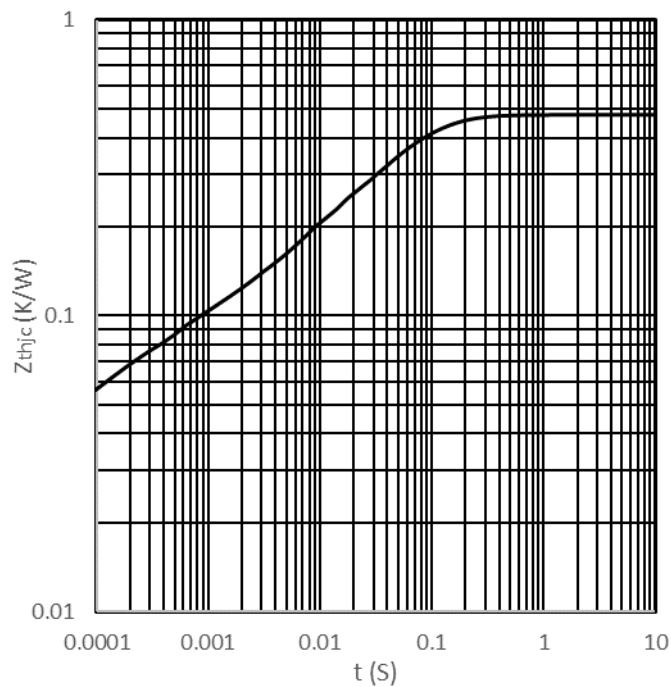
Switching losses IGBT,Inverter (typical)

Eon = f (RG), Eoff = f (RG)
VGE = ±15 V, Ic=75A, VCE = 600 V



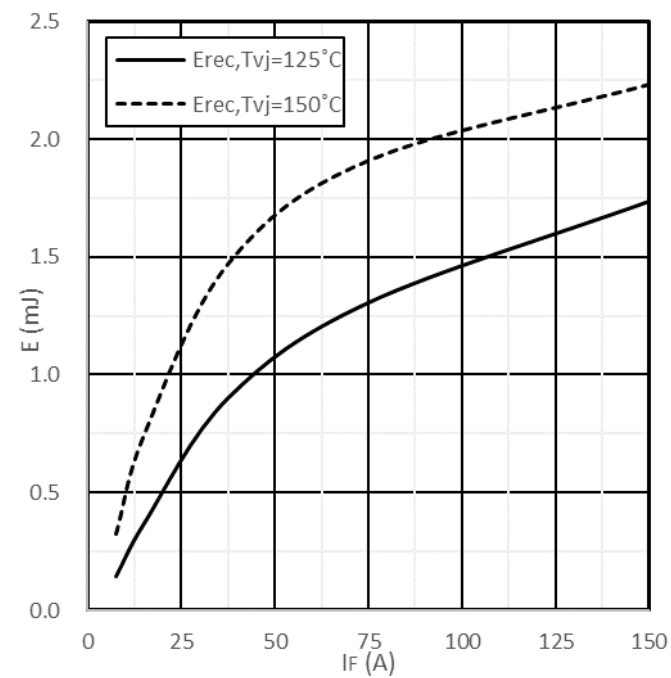
Transient thermal impedance IGBT,Inverter

ZthJC = f (t)



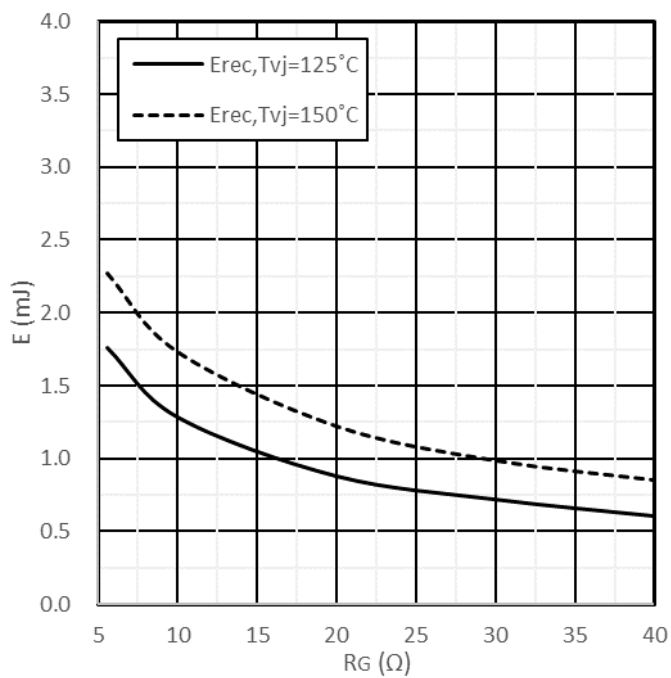
Switching losses Diode, Inverter (typical)

Erec = f (IF)
RGon = 10Ω, VCE = 600 V



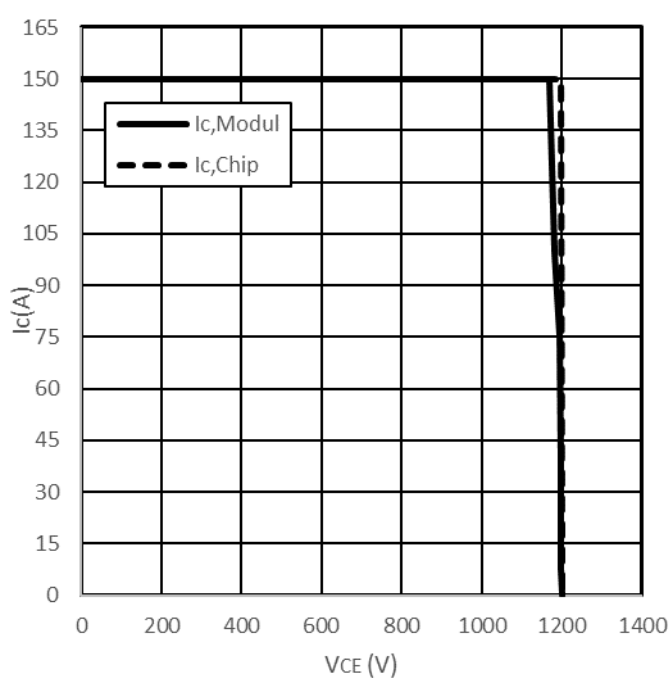
Switching losses Diode, Inverter (typical)

Erec = f (RG)
IF = 75 A, VCE = 600 V



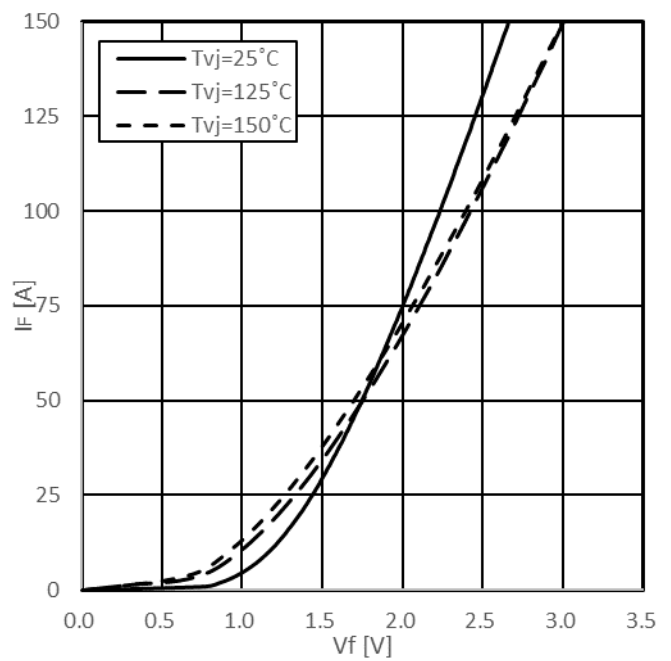
Reverse bias safe operating area IGBT,Inverter (RBSOA)

Ic = f (VCE)
VGE = ±15 V, RGoff = 10Ω, Tvj = 150°C



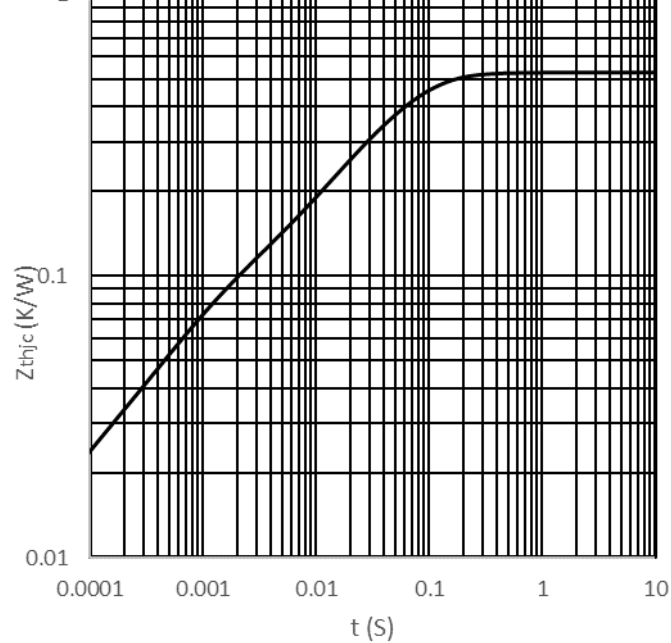
Forward characteristic of Diode, Inverter (typical)

IF = f (VF)



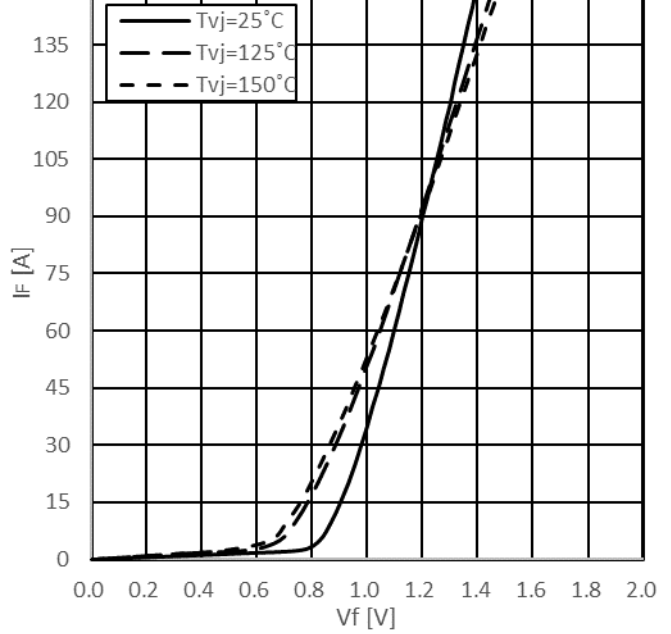
Transient thermal impedance Diode, Inverter

ZthJC = f (t)



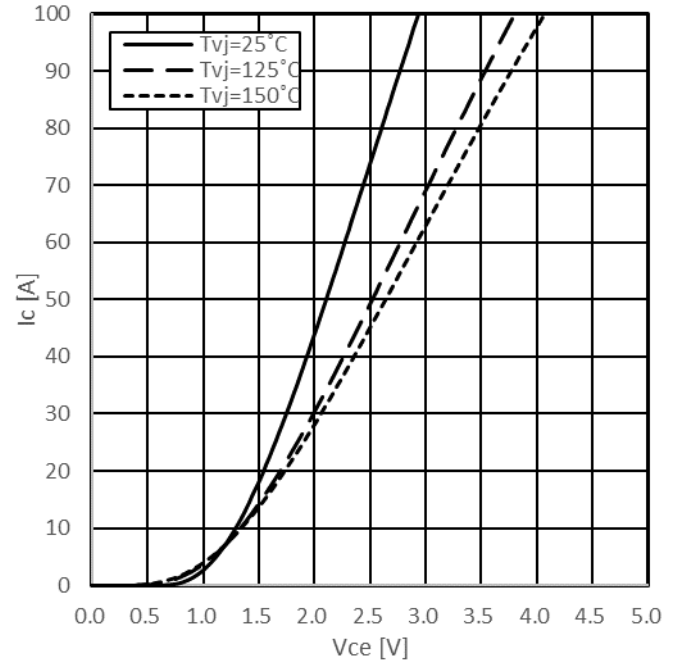
Forward characteristic of Diode, Rectifier (typical)

IF = f(VF)



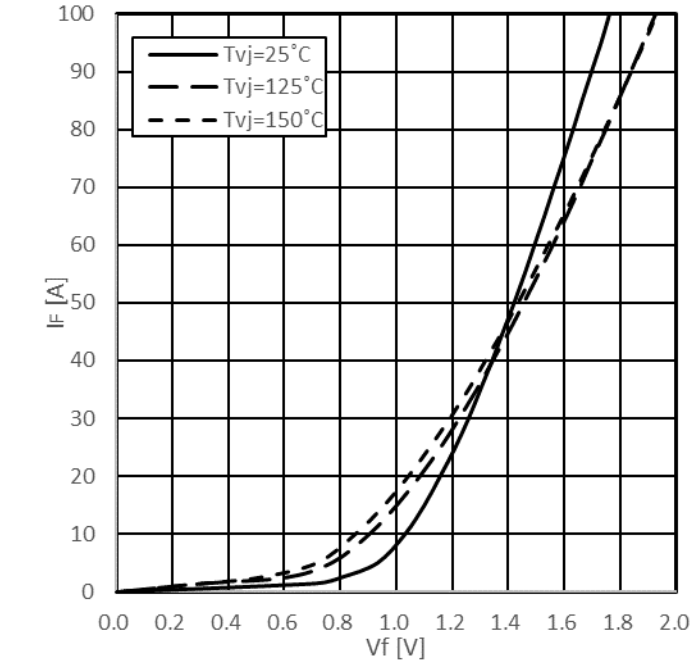
Output characteristic IGBT, Brake-Chopper (typical)

$I_c=f(V_{CE})$
 $V_{GE}=15V$



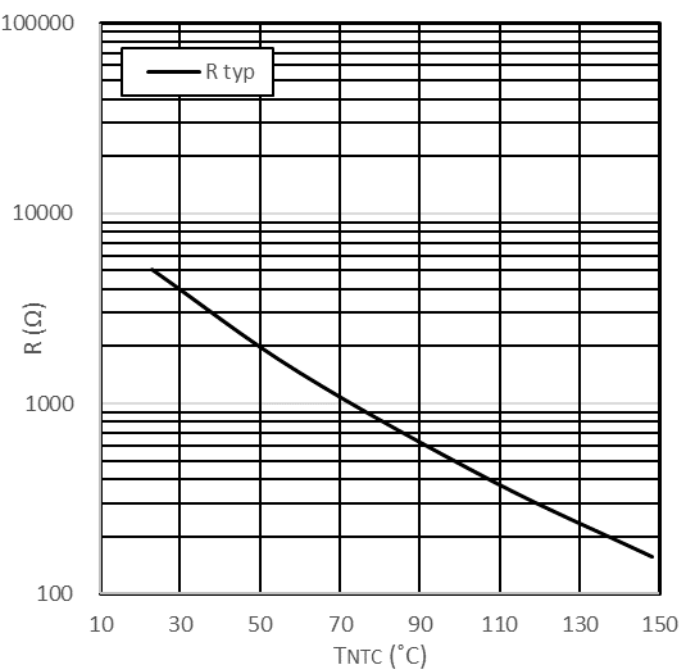
Forward characteristic of Diode, Brake-Chopper (typical)

$I_F = f(V_F)$

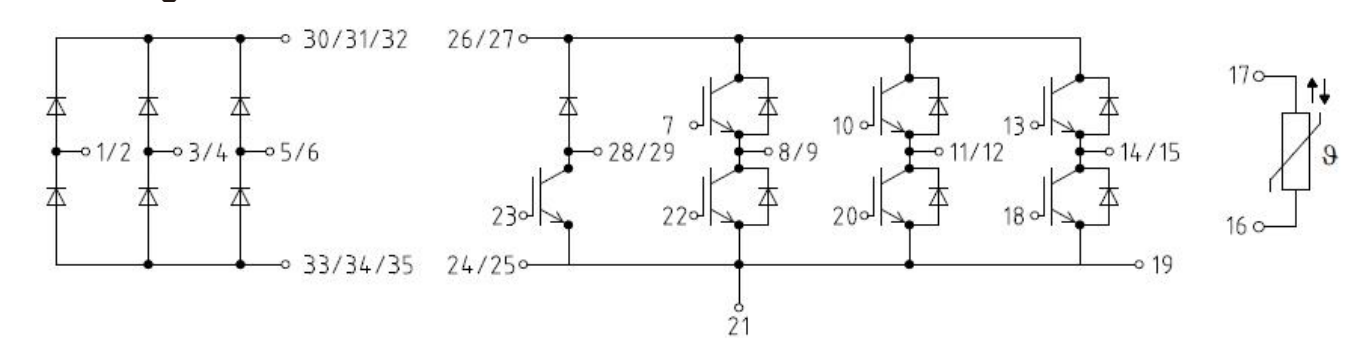


NTC-Thermistor-temperature characteristic (typical)

$R=f(T)$



Circuit Diagram



Package outlines

