

**Features:**

- n 10us short circuit capability
- n Low switching losses
- n  $V_{CE(sat)}$  with Positive temperature coefficient
- n Fast & soft reverse recovery anti-parallel FWD

**Typical Applications:**

- n Inverter for motor drive(VFD)
- n AC and DC servo drive amplifier
- n Uninterruptible power supply

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE			UNIT
			Min	Type	Max	
$V_{CES}$	Collector-Emitter voltage	$T_j=25^{\circ}C$			1200	V
$V_{GES}$	Gate-Emitter voltage	$T_j=25^{\circ}C$			$\pm 20$	V
$I_C$	Collector current	Continuous @ $T_C=125^{\circ}C$			40	A
$I_{CP}$		$T_P=1ms$			80	A
$T_j$	Junction temperature	/			150	$^{\circ}C$
$T_{op}$	Operating temperature	/	-40		150	$^{\circ}C$
$T_{stg}$	Storage temperature	/	-40		150	$^{\circ}C$
$V_{iso}$	Isolation between terminal and copper base	$T_j=25^{\circ}C$ , AC: 1minute	2500			V
$I_{CES}$	Zero gate voltage collector current	$T_j=25^{\circ}C$ , $V_{CE}=1200V$ , $V_{GE}=0V$			0.1	mA
$I_{GES}$	Gate-Emitter leakage current	$T_j=25^{\circ}C$ , $V_{CE}=0V$ , $V_{GE}=\pm 20V$	-0.4		0.4	$\mu A$
$BV_{CES}$		$V_{GE}=0V$ , $I_C=4mA$	1200			V
$V_{GE(th)}$	Gate-Emitter threshold voltage	$T_j=25^{\circ}C$ , $V_{CE}=20V$ , $I_C=4mA$	5.2	5.8	6.4	V
$V_{CE(sat)}$	Collector-Emitter saturation voltage	$T_j=25^{\circ}C$ , $V_{GE}=15V$ , $I_C=40A$		1.85	2.25	V
$R_{Gint}$	Integrated gate resistor			2		$\Omega$
$Q_g$	Gate Charge	$T_j=25^{\circ}C$ , $V_{CE}=600V$ , $I_C=40A$ , $V_{GE}=15V$		0.27		$\mu C$
$C_{ies}$	Input capacitance	$T_j=25^{\circ}C$ , $V_{CE}=25V$ , $V_{GE}=0V$ , $f=1MHz$		2.0		nF
$C_{oes}$	output capacitance			1.65		nF
$C_{res}$	Reverse transfer capacitance			0.07		nF
$t_{(d)on}$	Turn-on time	$V_{CC}=600V$ , $I_C=40A$ , $V_{GE}=\pm 15V$ , $R_g=27\Omega$ , Inductive load	$T_j=25^{\circ}C$	160		ns
$t_r$			$T_j=125^{\circ}C$	170		ns
	$t_{(d)off}$		$T_j=25^{\circ}C$	30		ns
$t_f$			$T_j=125^{\circ}C$	40		ns
	Turn-off time		$T_j=25^{\circ}C$	330		ns
$t_f$			$T_j=125^{\circ}C$	430		ns
	$t_f$		$T_j=25^{\circ}C$	80		ns
$T_j=125^{\circ}C$			150		ns	
tsc	Short circuit withstand time	$V_{CES} \leq 600V$ , $V_{GE}=\pm 15V$ , $R_g=1.5\Omega$		10		$\mu s$
$V_F$	Forward on voltage	$T_j=25^{\circ}C$ , $I_F=40A$		1.70	2.15	V
		$T_j=125^{\circ}C$ , $I_F=40A$		1.65		V
$I_{FRM}$	Repetitive peak forward current			80		A
$t_{rr}$	Reverse recovery time	$T_j=25^{\circ}C$ , $I_F=40A$ , $di_F/dt=-1600A/\mu s$ , $V_R=600V$		293		ns
$R_{th(j-c)}$	Thermal resistance(per chip)	IGBT		0.72		$^{\circ}C/W$
		FWD		1.00		$^{\circ}C/W$
$R_{25}$	Resistance	$T_{vj}=25^{\circ}C$		5		k $\Omega$

B <sub>25/50</sub>	$R_2=R_{25} \exp [B_{25/50}(1/T_2-1/(298,15K))]$		3375		K
Outline	256H5P				

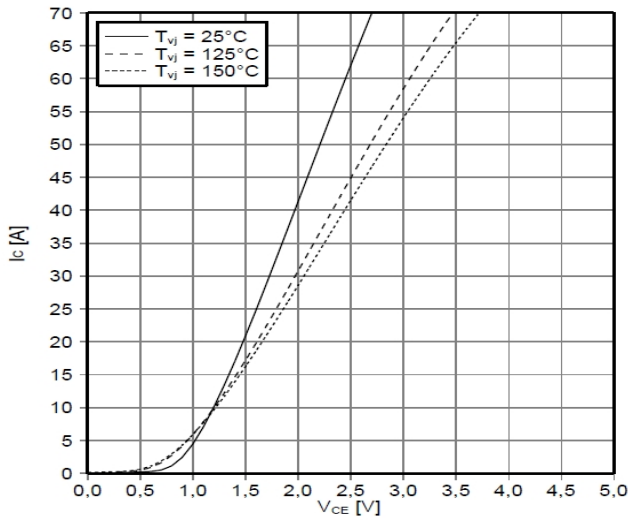


Fig.1 output characteristic IGBT, Inverter

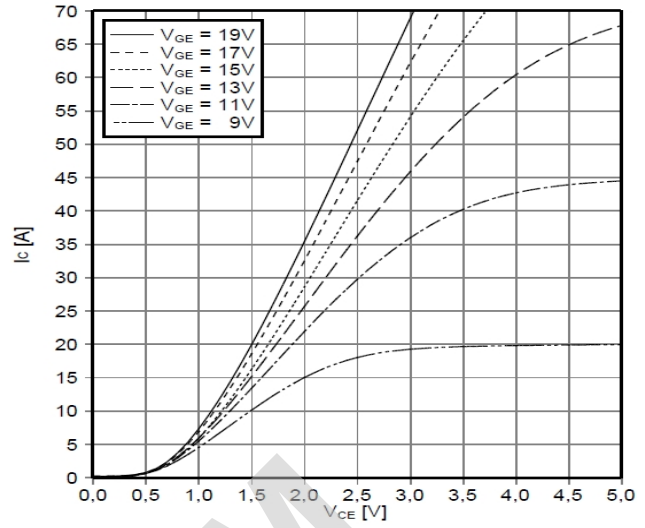


Fig.2 output characteristic IGBT, Inverter

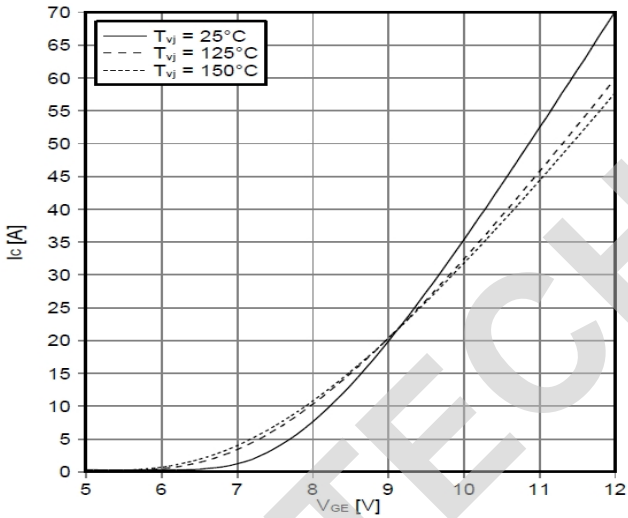


Fig.3 transfer characteristic IGBT, Inverter

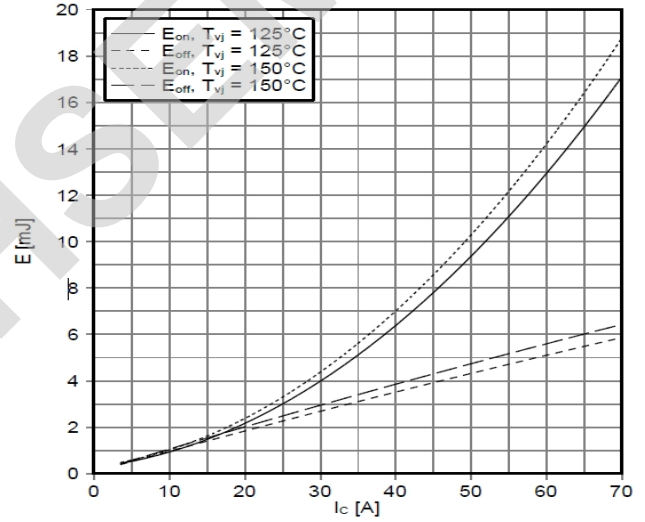


Fig.4 switching losses IGBT, Inverter

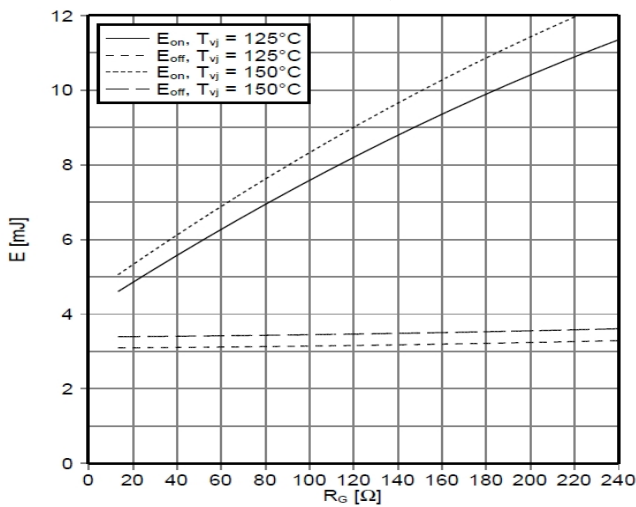


Fig.5 switching losses IGBT, Inverter

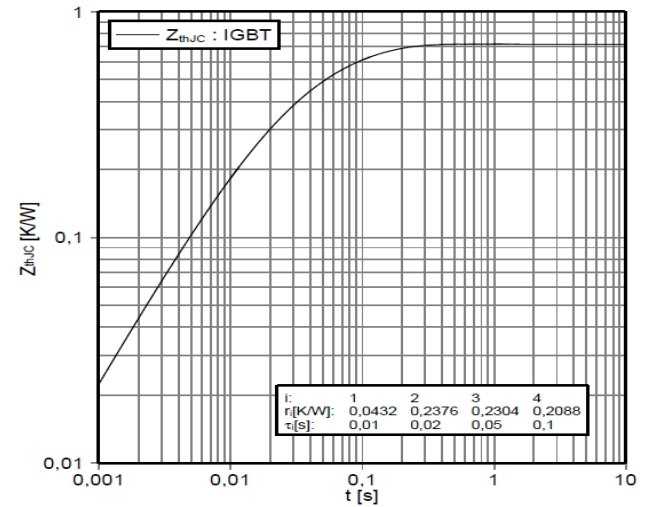


Fig.6 transient thermal impedance IGBT, Inverter

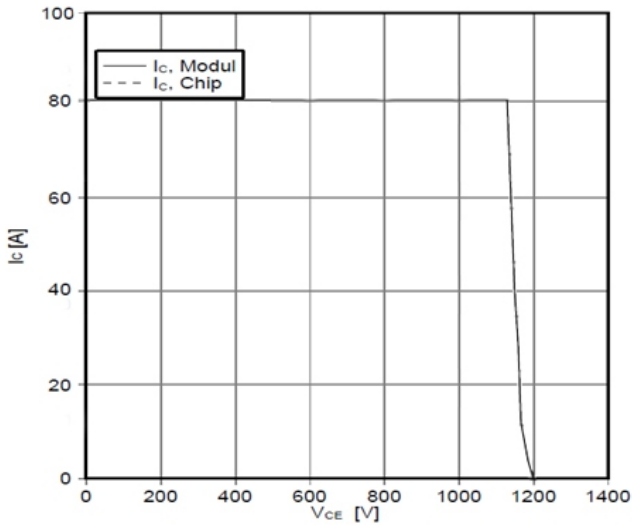


Fig.7 reverse bias safe operating area IGBT, Inverter (RBSOA)

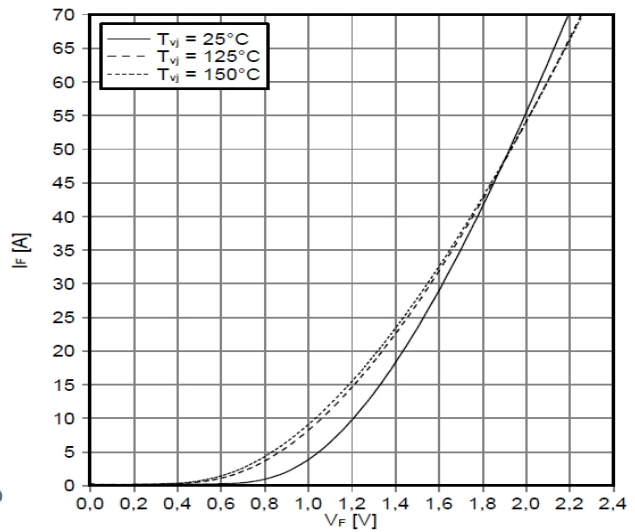


Fig.8 forward characteristic of Diode, Inverter

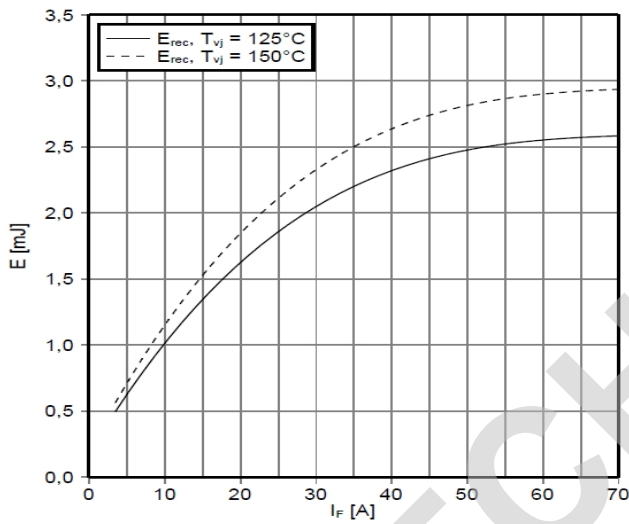


Fig.9 switching losses Diode, Inverter

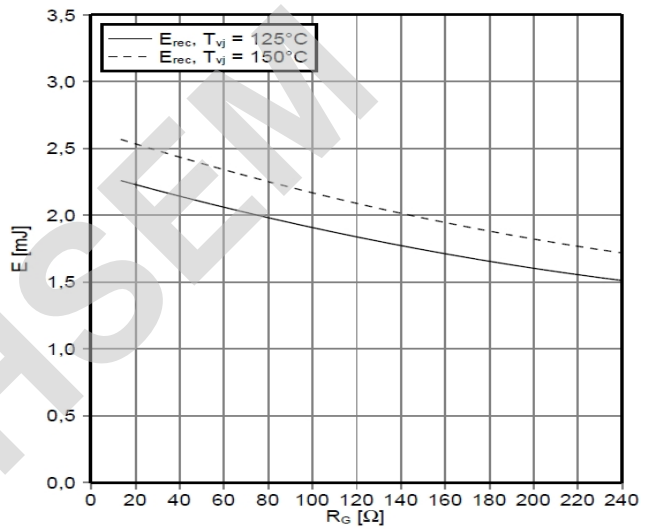


Fig.10 switching losses Diode, Inverter

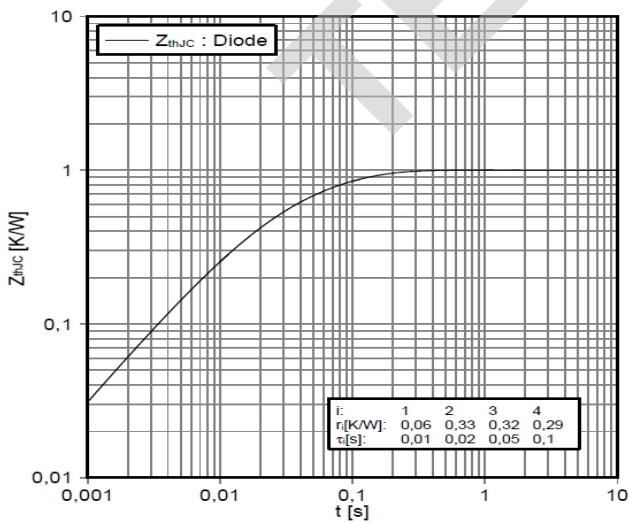


Fig.11 transient thermal impedance Diode, Inverter

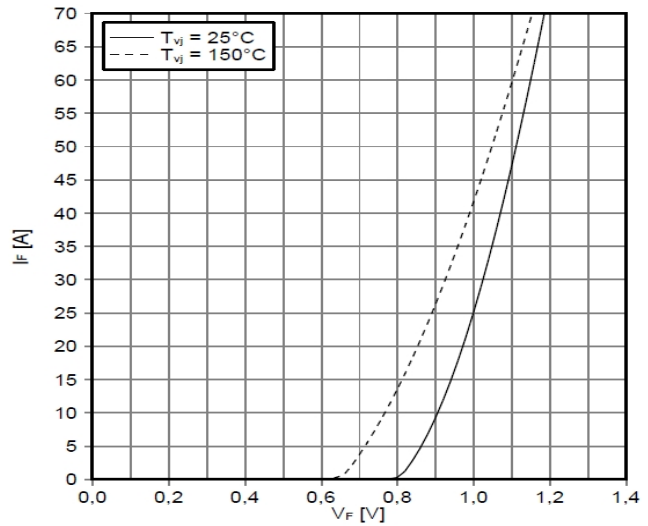


Fig.12 forward characteristic of Diode, Rectifier

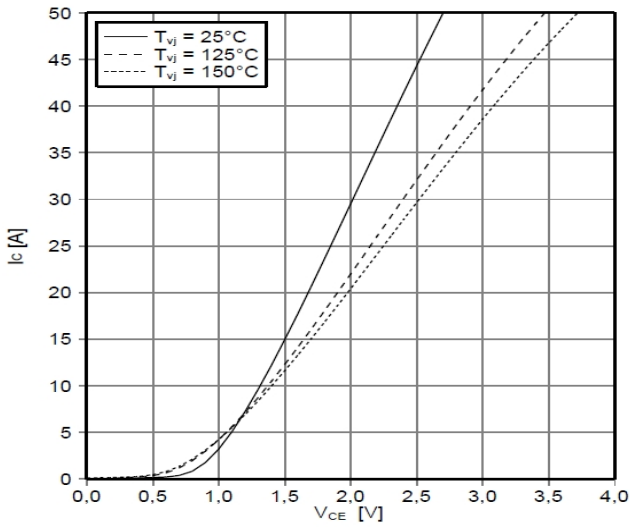


Fig.13 output characteristic IGBT, Brake-Chopper

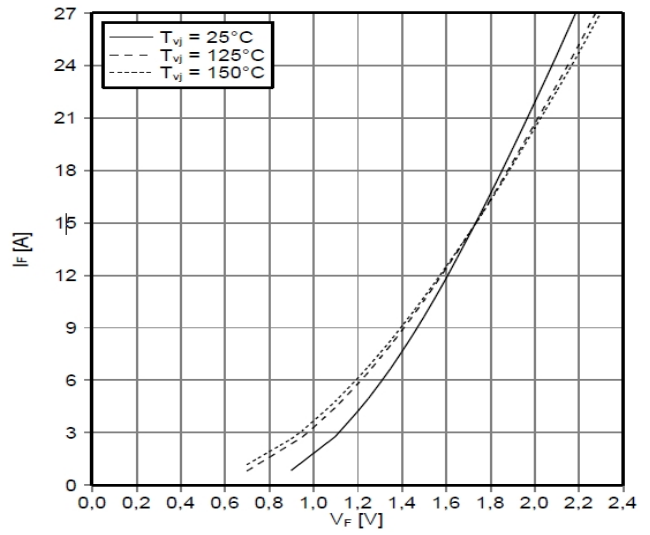


Fig.14 forward characteristic of Diode, Brake-Chopper

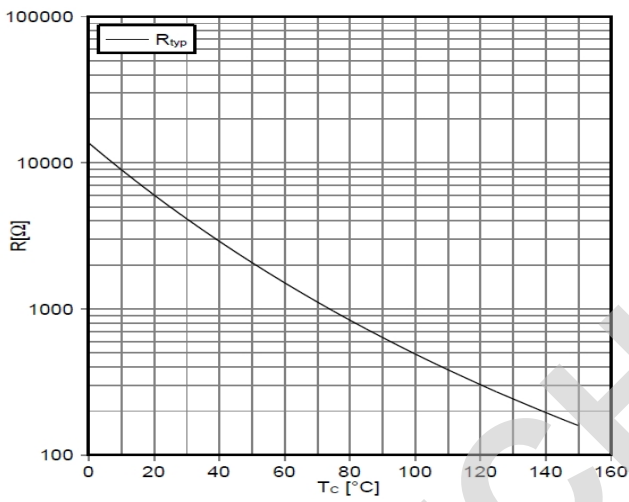
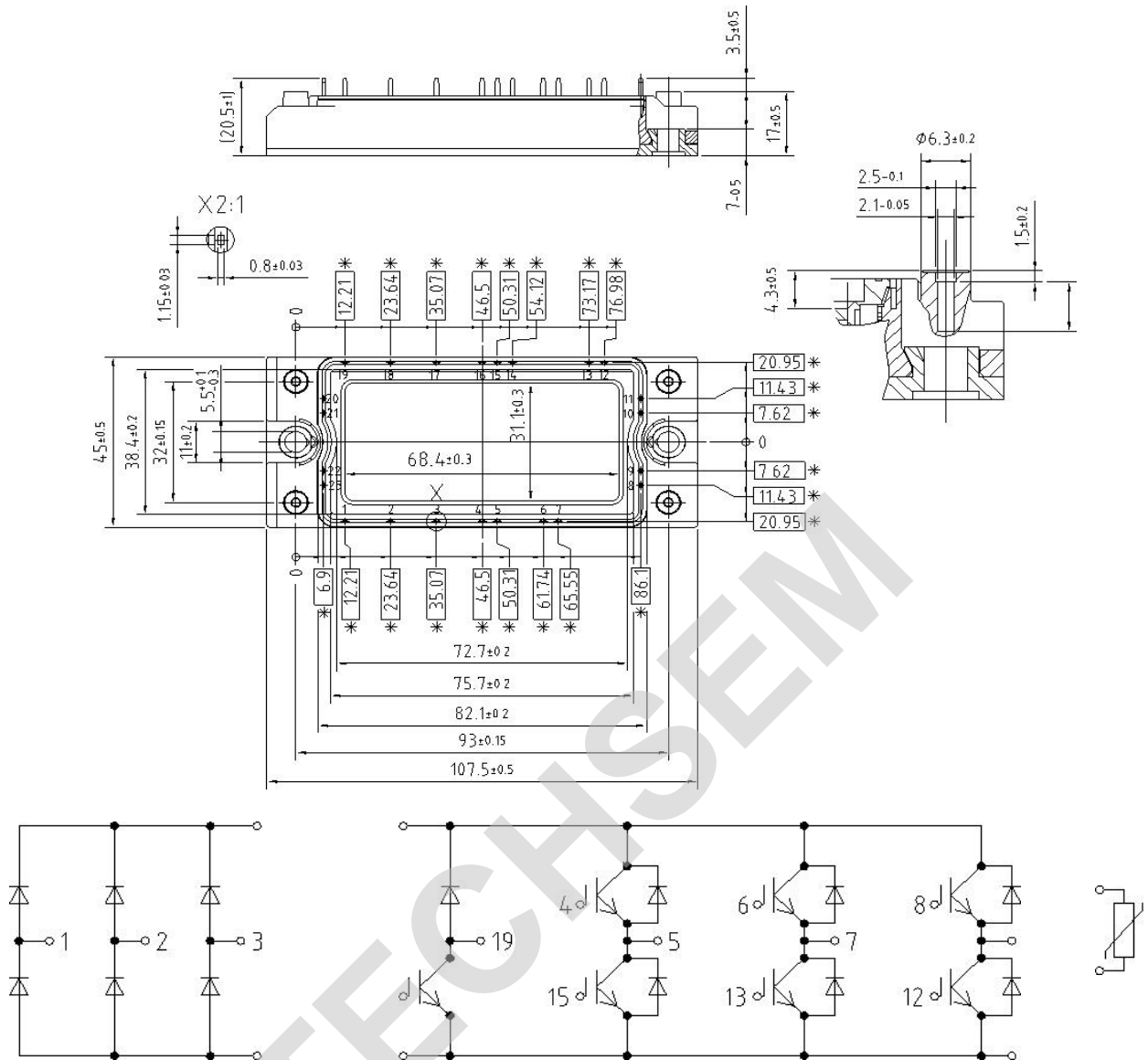


Fig.15 NTC-Thermistor-temperature characteristic

Outline:



Unmarked dimensional tolerance:  $\pm 0.5$ mm

TECHSEM reserves the right to change specifications without notice.