

**/ Descriptions**

KF \$\* G Insulated-Gate Bipolar Transistor in a TO-3P Plastic Package.

**/ Features**

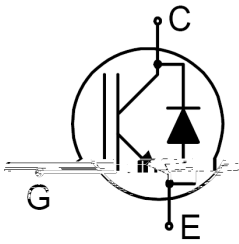
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Low gate charge,, Low saturation voltage ,Positive temperature coefficient, RoHS product.

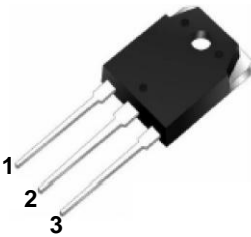
**/ Applications**

General purpose inverter, Frequency converters, Induction Heating(IH), Uninterrupted Power Supply(UPS).

**/ Equivalent Circuit**



**/ Pinning**



PIN1 Gate      PIN 2 Collector      PIN 3 Emitter

**/ h<sub>FE</sub> Classifications & Marking**

See Marking Instructions.

**/ Absolute Maximum Ratings(Ta=25 )**

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	$V_{CES}$	1200	V
Gate-emitter voltage	$V_{GES}$	$\pm 20$	V
Collector current	$I_C$	30	A
Collector current@ $T_C=100^\circ\text{C}$		15	A
Collector peak current, $T_P$ limited by $T_{JMAX}$	$I_{CM}$	45	A
Diode forward current@ $T_C=100^\circ\text{C}$	$I_F$	15	A
Diode maximum forward current	$I_{FM}$	45	A
Power dissipation( $T_C=25^\circ\text{C}$ )	$P_D$	186	W
Power dissipation( $T_C=100^\circ\text{C}$ )		74	W
Operating junction and storage temperature range	$T_J, T_{stg}$	-55~150	$^\circ\text{C}$
Maximum temperature for soldering	$T_L$	300	$^\circ\text{C}$
IGBT thermal resistance,junction-case	$R_{th(j-c)}$	0.67	$^\circ\text{C/W}$
Diode thermal resistance,junction-case	$R_{th(j-C)}$	2.88	$^\circ\text{C/W}$
Thermal resistance,junction-ambient	$R_{th(j-a)}$	40	$^\circ\text{C/W}$

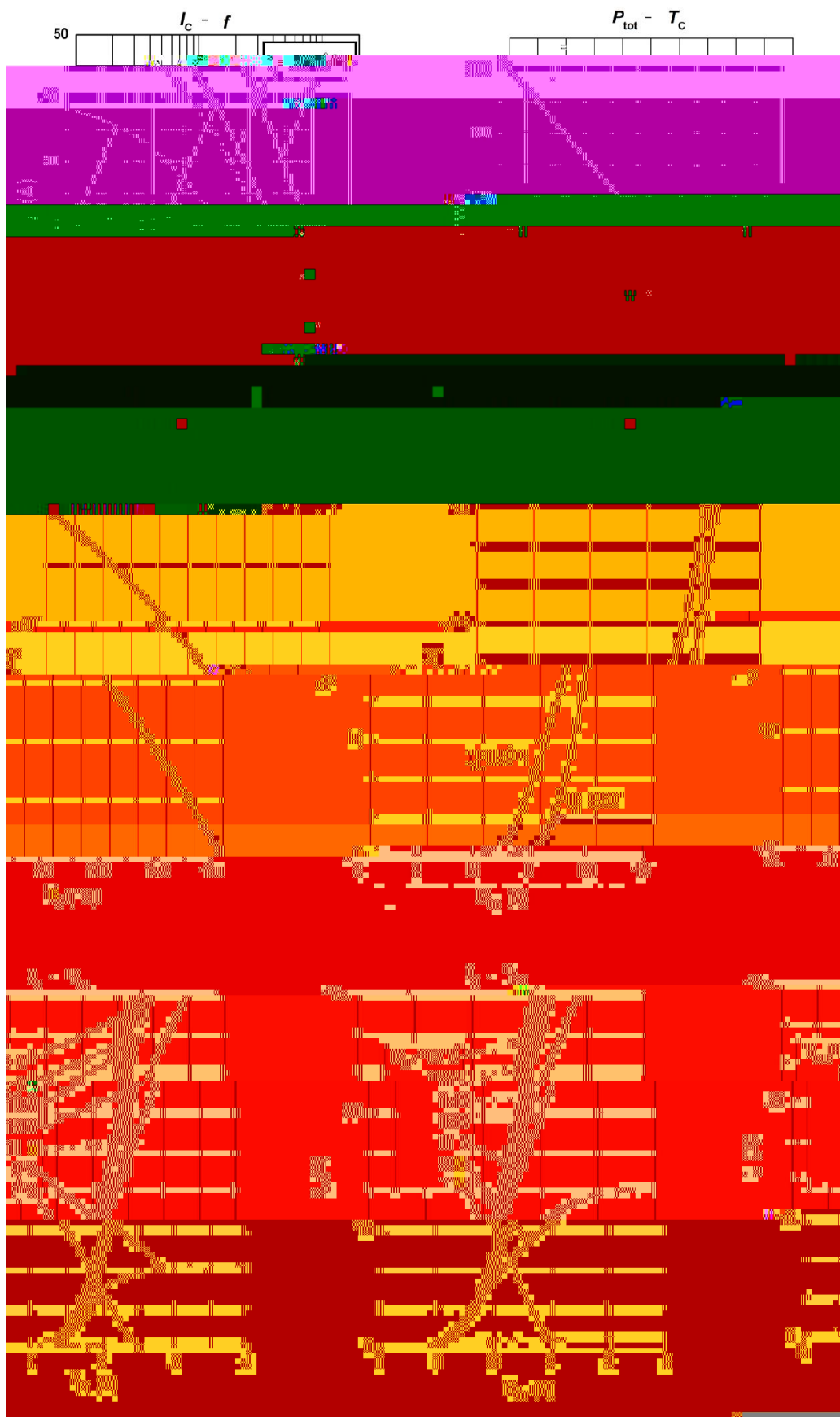
**/ Electrical Characteristics(Ta=25 )**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	$V_{CES}$	$V_{GE}=0V; I_{CE}=250\mu\text{A}$	1200	-	-	V
Zero gate voltage Collector current	$I_{CES}$	$V_{GE}=0V; V_{CE}=1200V$	-	-	1	mA
Gate-body leakage current	$I_{GES}$	$V_{GE}=\pm 20V; V_{CE}=0V$	-	-	$\pm 250$	nA
Gate threshold voltage	$V_{GE(th)}$	$I_C=15\text{mA}; V_{CE}=V_{GE}$	5.0	6.4	7.0	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=15\text{A}; V_{GE}=15V$	-	2	2.5	V
Input capacitance	$C_{ies}$	$V_{CE}=30V, V_{GE}=0V, f=1\text{MHz}$	-	2620	-	pF
Output capacitance	$C_{oes}$		-	67	-	
Reverse transfer capacitance	$C_{res}$		-	43	-	

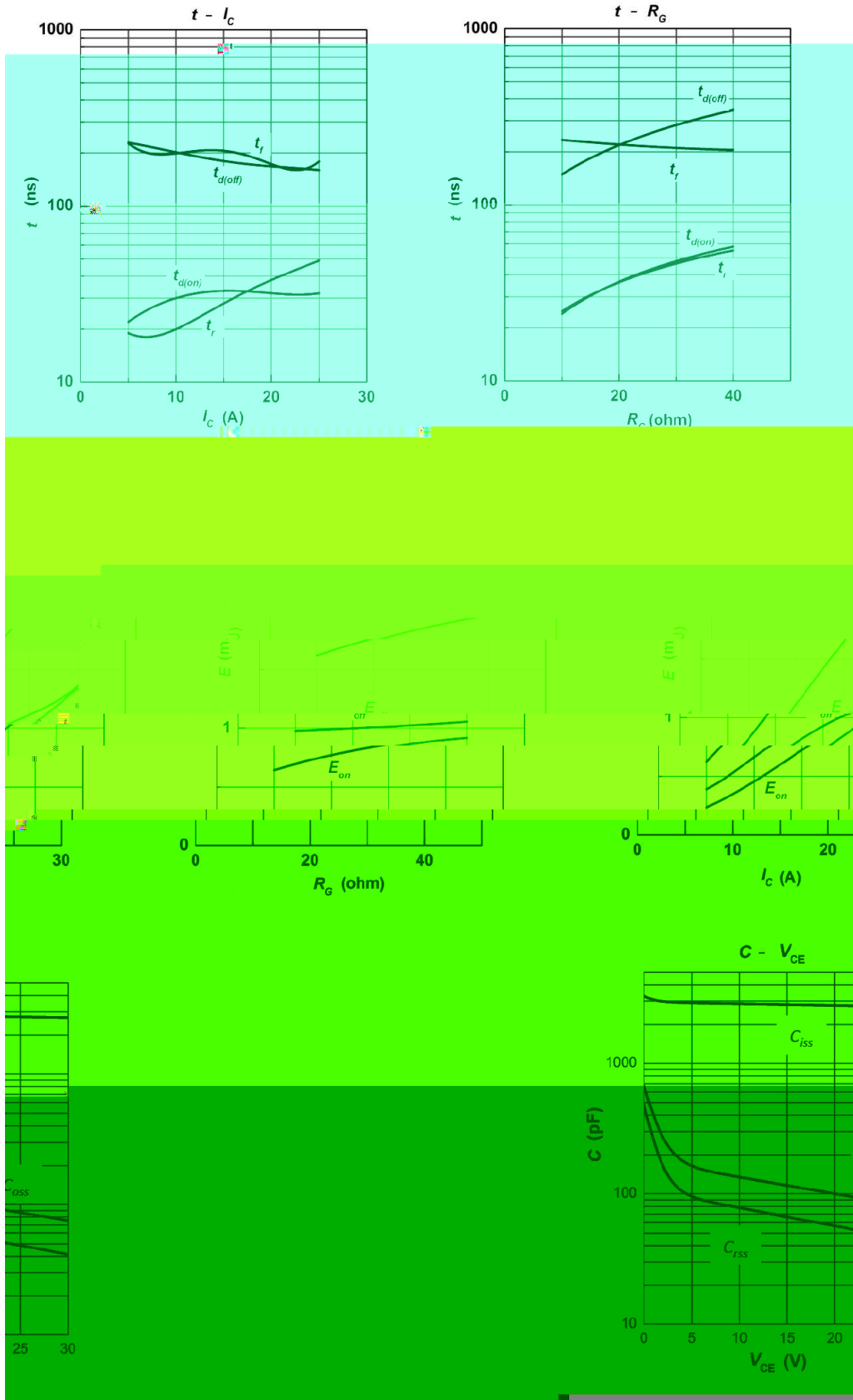
**/ Electrical Characteristics(Ta=25 )**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-on delay time	$t_{d(ON)}$	$V_{CE}=600V \quad I_C=15A$ $R_G=15\Omega \quad V_{GE}=15/0V$ Inductive Load	-	25	-	ns
Rise time	$t_r$		-	48	-	
Turn-off delay time	$t_{d(OFF)}$		-	155	-	
Fall time	$t_f$		-	115	-	
Turn-On Switching Loss	$E_{on}$		-	0.67	-	mJ
Turn-Off Switching Loss	$E_{off}$		-	0.45	-	
Total Switching Loss	$E_{ts}$		-	1.12	-	
Total gate charge	$Q_G$	$V_{CE}=600V \quad I_C=15A$ $V_{GE}=15V$	-	130	180	nC
Gate-emitter charge	$Q_{G-E}$		-	15	22	
Gate-collector charge	$Q_{G-C}$		-	50	65	
Diode forward voltage	$V_F$	$I_F=15A$	-	1.2	2.0	V
Reverse recovery time	$T_{rr}$	$I_F=15A$ $di/dt=200A/\mu S$	-	330	360	ns
Diode Peak Reverse Recovery Current	$I_{rr}$		-	30	40	A
Reverse recovery charge	$Q_{rr}$		-	4770	6600	nC

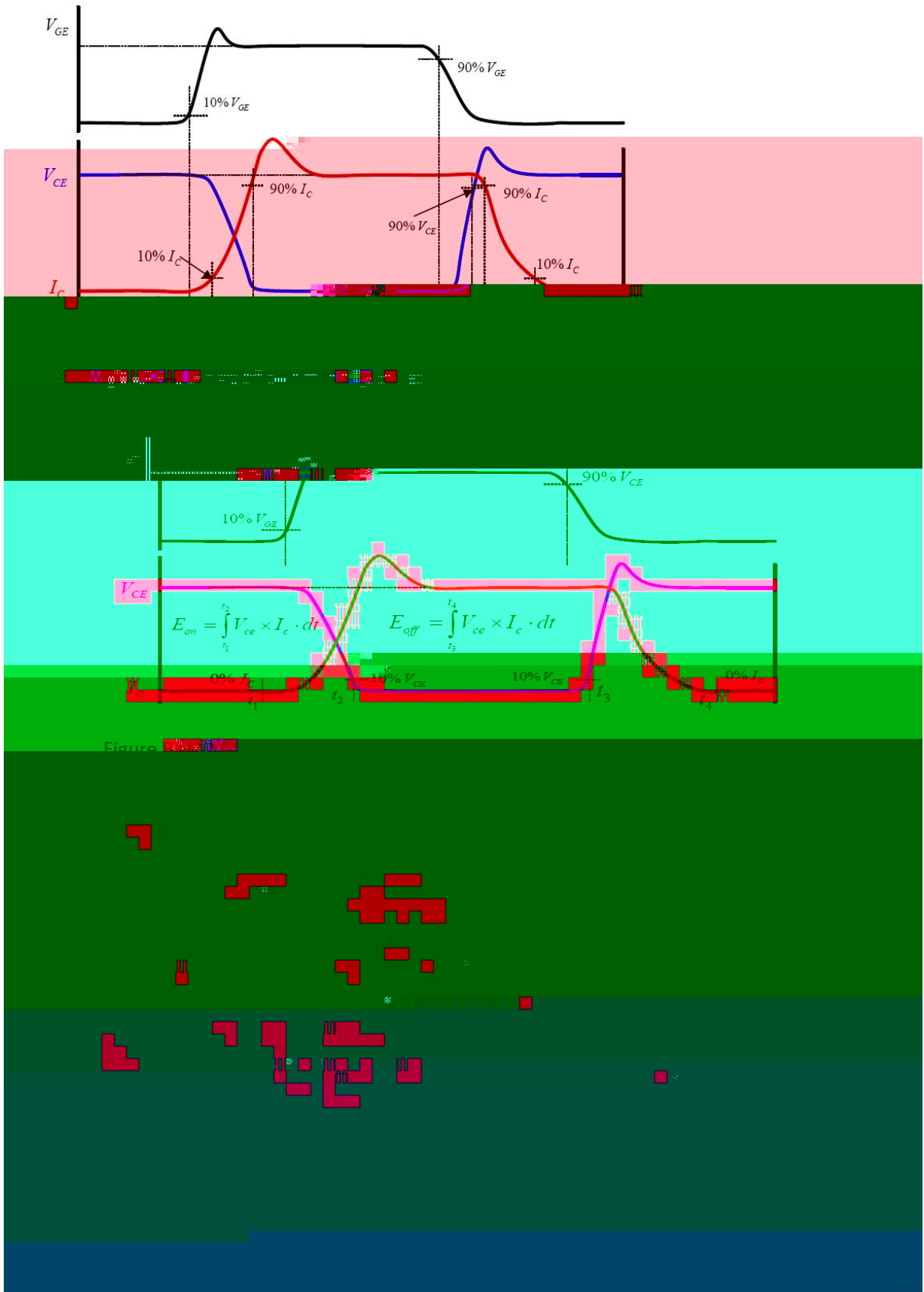
/ Electrical Characteristic Curve



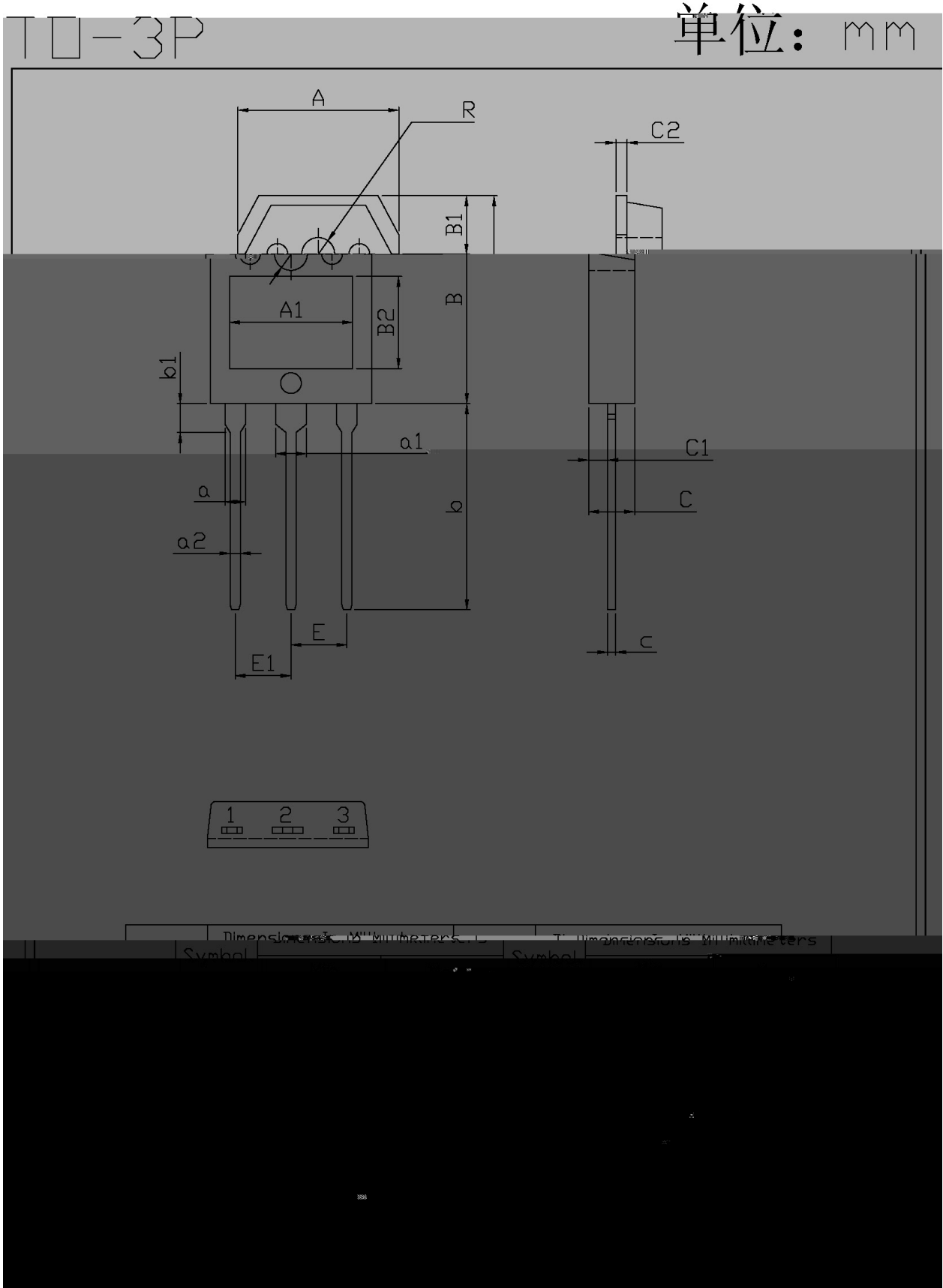
/ Electrical Characteristic Curve



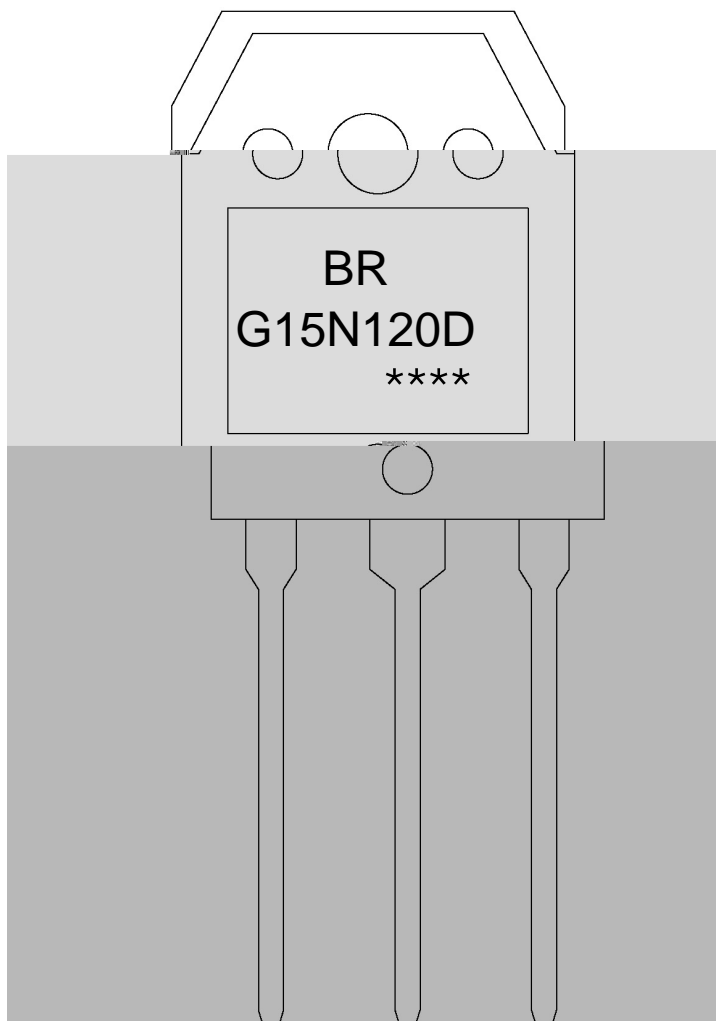
/ Wave curve



/ Package Dimensions



**/ Marking Instructions**



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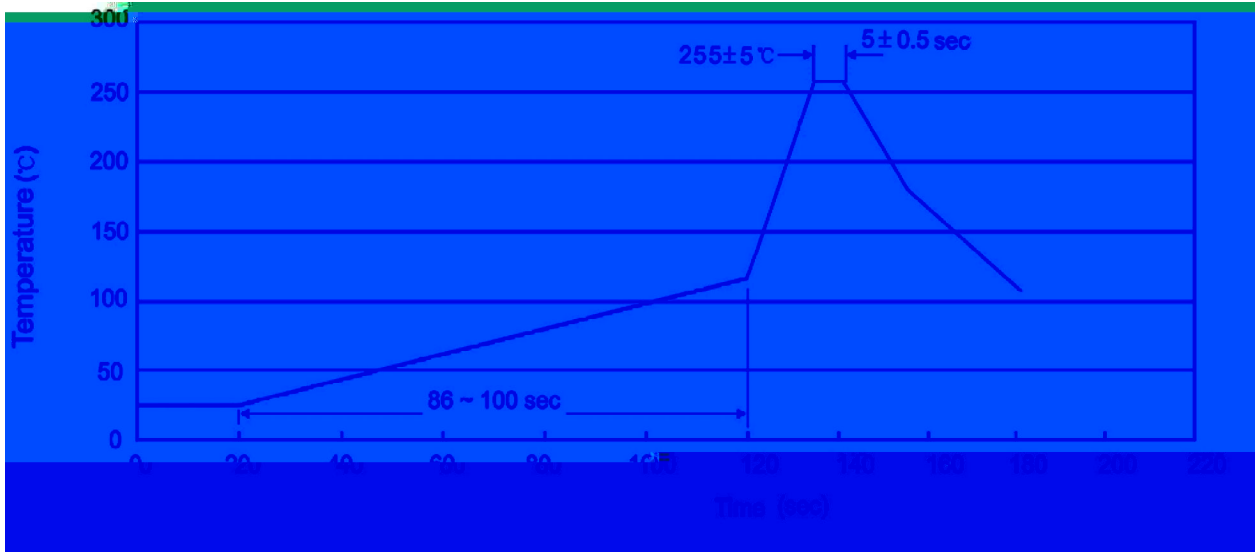
Note:

BR: Company Code.

G15N120D: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

( ) / **Temperature Profile for Dip Soldering(Pb-Free)**



**Note:**

- |   |        |     |            |        |   |
|---|--------|-----|------------|--------|---|
| 1 | 25     | 150 | 60         | 90sec; | 1.Preheating:25~150 , Time:60~90sec.      |
| 2 | 255..5 |     | 5..0.5sec; |        | 2.Peak Temp.:255..5 , Duration:5..0.5sec. |
| 3 |        | 2   | 10         | /sec.  | 3. Cooling Speed: 2~10 /sec.              |

/ **Resistance to Soldering Heat Test Conditions**

270..5                      10..1 sec.                      Temp.:270±5°C                      Time:10±1 sec

/ **Packaging SPEC.**

/ **TUBE**

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-3P	30	15	450	5	2250	497.5×46×8	555×164×50	575 290 180

/ **Notices**