

/ Descriptions

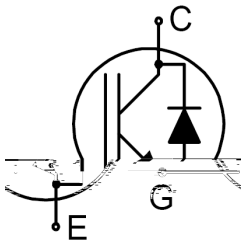
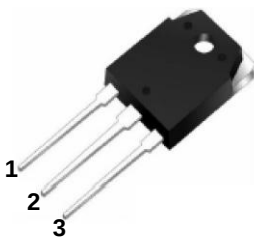
Insulated-Gate Bipolar Transistor in a TO-3P Plastic Package.

/ Features

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_{FE} Classifications & Marking

See Marking Instructions.

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	1200	V
Gate-emitter voltage	V_{GES}	± 20	V
Collector current	I_C	40	A
Collector current@ $T_C=100^\circ\text{C}$		20	A
Collector peak current, T_P limited by T_{JMAX}	I_{CM}	60	A
Diode forward current@ $T_C=100^\circ\text{C}$	I_F	20	A
Diode maximum forward current	I_{FM}	60	A
Power dissipation($T_C=25^\circ\text{C}$)	P_D	240	W
Power dissipation($T_C=100^\circ\text{C}$)		96	W
Operating junction and storage temperature range	T_J, T_{stg}	$-55 \sim 150$	$^\circ\text{C}$
Maximum temperature for soldering	T_L	300	$^\circ\text{C}$
IGBT thermal resistance,junction-case	$R_{th(j-c)}$	0.52	$^\circ\text{C/W}$
Diode thermal resistance,junction-case	$R_{th(j-C)}$	2.4	$^\circ\text{C/W}$
Thermal resistance,junction-ambient	$R_{th(j-a)}$	40	$^\circ\text{C/W}$

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{CES}	$V_{GE}=0V$ $I_{CE}=250\mu A$	1200	-	-	V
Zero gate voltage Collector current	I_{CES}	$V_{GE}=0V$ $V_{CE}=1200V$	-	-	1	mA
Gate-body leakage current	I_{GES}	$V_{GE}=\pm 20V$ $V_{CE}=0V$	-	-	± 250	nA
Gate threshold voltage	$V_{GE(th)}$	$I_C=15mA$ $V_{CE}=V_{GE}$	3.5	-	7.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=20A$ $V_{GE}=15V$	-	2	2.5	V
Input capacitance	C_{ies}	$V_{CE}=25V$ $f=1MHz$ $V_{GE}=0V$	-	3030	-	pF
Output capacitance	C_{oes}		-	76	-	
Reverse transfer capacitance	C_{res}		-	125	-	

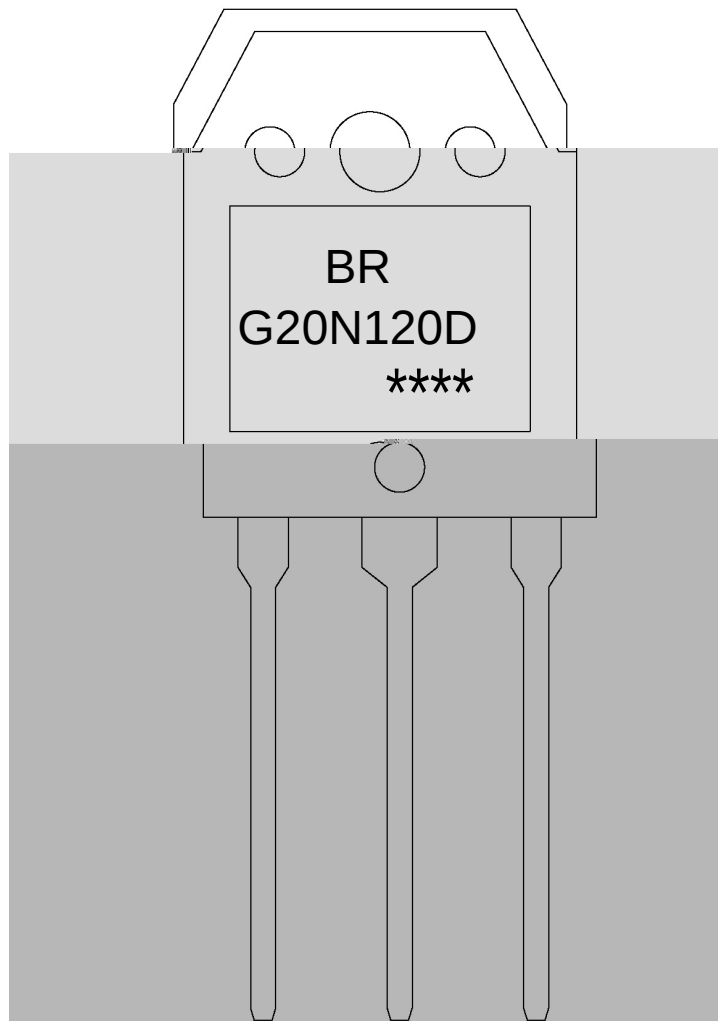
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-on delay time	$t_{d(ON)}$	$V_{CC}=600V$ $I_C=20A$, $R_G=10\Omega$ $V_{GE}=15V$ Inductive Load	-	41	-	ns
Rise time	t_r		-	38	-	
Turn-off delay time	$t_{d(OFF)}$		-	206	-	
Fall time	t_f		-	341	-	
Turn-On Switching Loss	E_{on}		-	1	2.1	mJ
Turn-Off Switching Loss	E_{off}		-	1.2	1.5	
Total Switching Loss	E_{ts}		-	2.1	3.6	
Total gate charge	Q_G	$V_{CC}=600V$ $I_C=20A$ $V_{GE}=15V$	-	154	224	nC
Gate-emitter charge	Q_{G-E}		-	16	25	
Gate-collector charge	Q_{G-C}		-	56	80	
Diode forward voltage	V_F	$I_F=20A$	-	1.3	2.7	V
Reverse recovery time	T_{rr}		-	430	481	ns
Diode Peak Reverse Recovery						

$I_F=20A$
 $di/dt=200A/\mu S$

單位：



/ Marking Instructions



Note:

BR: Company Code.

G20N120D: 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℃ 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 ³)		
	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