RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

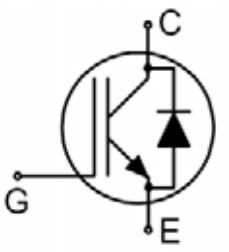
RI25N1200TP

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

Features

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

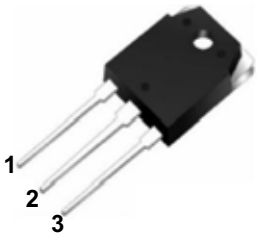
Equivalent Circuit



Applications

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

Pinning



PIN1：Gate
PIN 2：Collector
PIN 3：Emitter

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	1200	V
Gate-emitter voltage	V_{GES}	±20	V
Collector current	I_C	50	A
Collector current@T_C=100℃		25	A
Collector peak current, T_P limited by T_{JMAX}	I_{CM}	60	A
Diode forward current@T_C=100℃	I_F	25	A
Diode maximum forward current	I_{FM}	75	A
Power dissipation(T_C=25℃)	P_D	350	W
Operating junction and storage temperature range	T_J, T_{stg}	-55～150	℃
Maximum temperature for soldering	T_L	300	℃
IGBT thermal resistance,junction-case	$R_{th(j-c)}$	0.4	℃/W
Diode thermal resistance,junction-case	$R_{th(j-C)}$	2	℃/W
Thermal resistance,junction-ambient	$R_{th(j-a)}$	40	℃/W

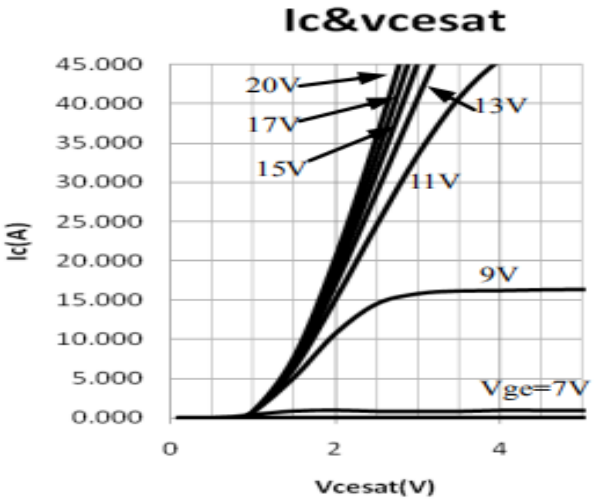
Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{CES}	V_{GE}=0V I_{CE}=250uA	1200	-	-	V
Breakdown Voltage Temperature Coefficient	$\triangle BV_{CES}/\triangle T_J$	I_{CE}=1mA;reference to 25℃		0.6		V/℃
Zero gate voltage Collector current	I_{CES}	V_{GE}=0V;V_{CE}=1200V Tc=25℃	-	-	0.2	mA
		Tc=100℃			2	mA
		Tc=150℃			2.5	mA
Gate-body leakage current	I_{GES}	V_{GE}=±20V V_{CE}=0V	-	-	±100	nA
Gate threshold voltage	$V_{GE(th)}$	I_C=600μA V_{CE}=V_{GE}	4.5	-	6.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=25A; V_{GE}=15V Tc=25℃	-	1.8	2.45	V
		Tc=100℃		2.0		V
		Tc=150℃		2.1		V
Short Collector current	$I_{C(SC)}$	V_{GE}=15V;V_{CE}=600V; tsc＜10μs Tc=25℃		160		A
Input capacitance	C_{ies}	V_{CE}=25V V_{GE}=0V f=1MHz	-	1600	2400	pF
Output capacitance	C_{oes}		-	120	190	
Reverse transfer capacitance	C_{res}		-	84	130	

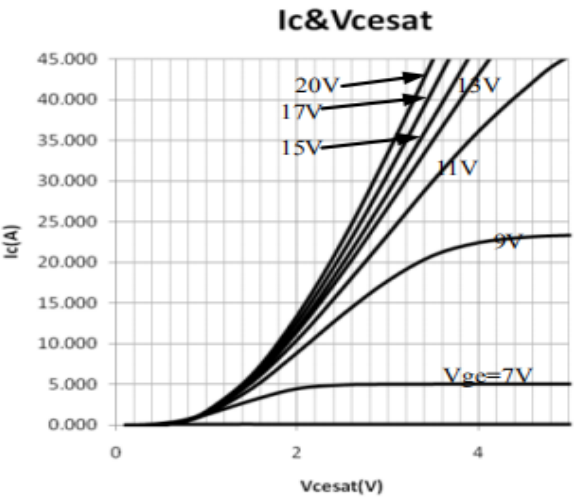
Electrical Characteristics(Ta=25 ℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-on delay time	$t_{d(ON)}$	V_{CE}=600V I_C=25A R_G=10Ω Inductive Load	-	90	-	ns
Rise time	t_r		-	75	-	
Turn-off delay time	$t_{d(OFF)}$		-	210	-	
Fall time	t_f		-	100	-	
Turn-On Switching Loss	E_{on}		-	2.8	-	mJ
Turn-Off Switching Loss	E_{off}		-	1.1	-	
Total Switching Loss	E_{ts}		-	3.9	-	
Total gate charge	Q_G	V_{CE}=600V I_C=25A V_{GE}=15V	-	177	274	nC
Gate-emitter charge	Q_{G-E}		-	16	26	
Gate-collector charge	Q_{G-C}		-	61	94	
Diode forward voltage	V_F	I_F=25A	-	1.7	2.9	V
Reverse recovery time	Trr	V_{GE}=0V, VR=800V I_F=25A di/dt=200A/μS	-	230		ns
Reverse recovery charge	Qrr		-	1200		nC

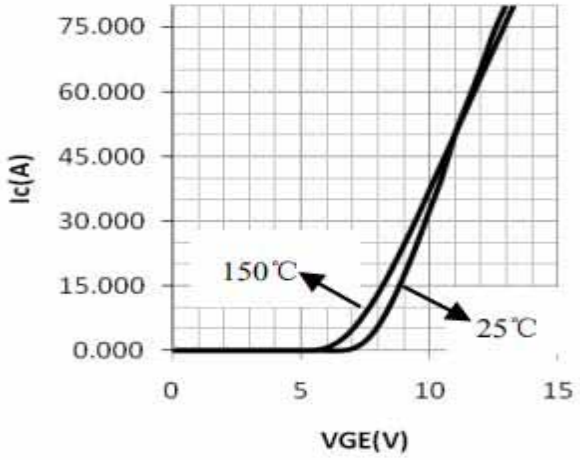
RATING AND CHARACTERISTICS CURVES (RI25N1200TP)



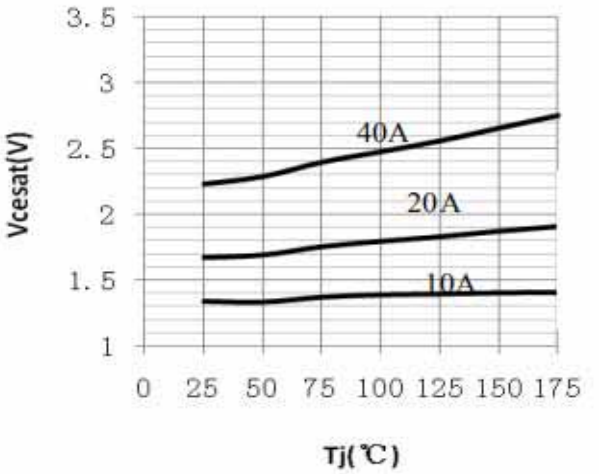
1.Typical Output Characteristics(Tj=25℃)



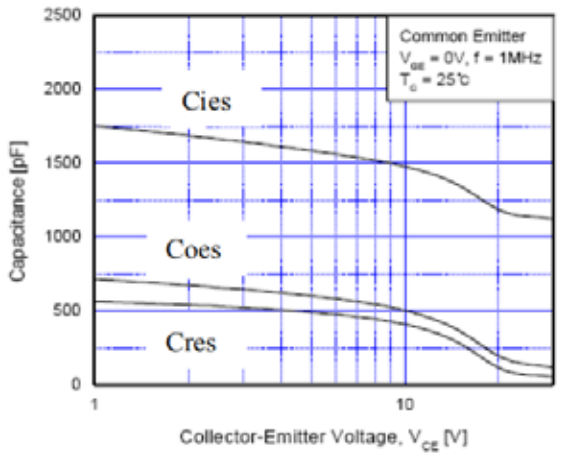
2.Typical Output Characteristics(Tj=150℃)



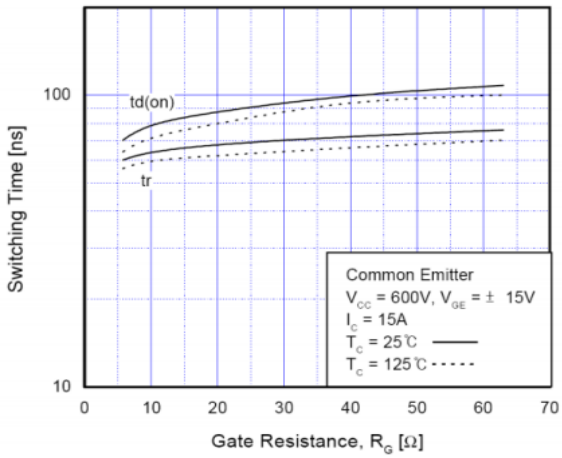
3.Typical Saturation Voltage Characteristics



4.Saturation Voltage vs. Case Temperature at Variant Current Level

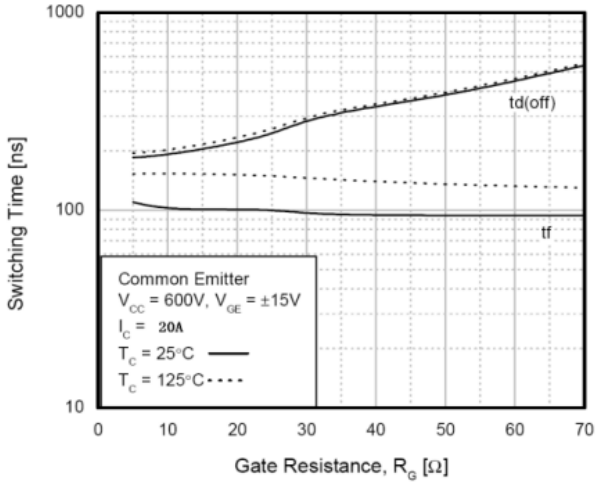


5.Capacitance Characteristics

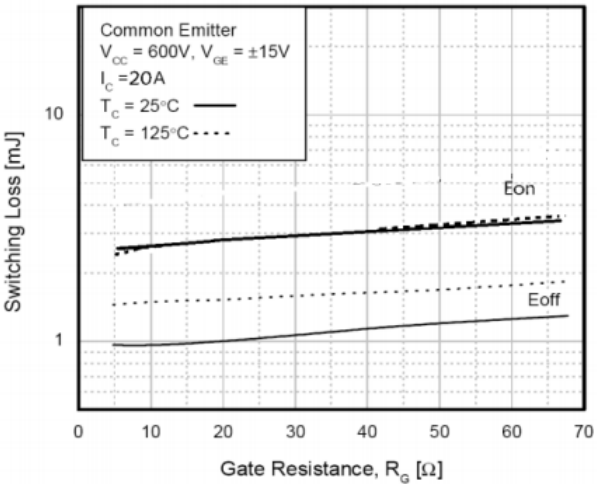


6.Turn-On Characteristics vs. Gate Resistance

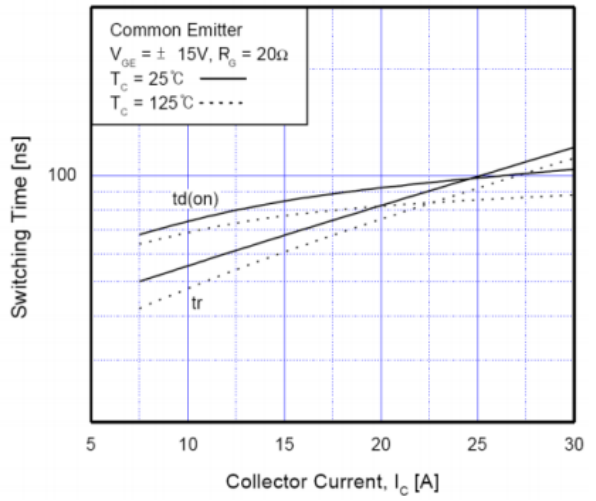
RATING AND CHARACTERISTICS CURVES (RI25N1200TP)



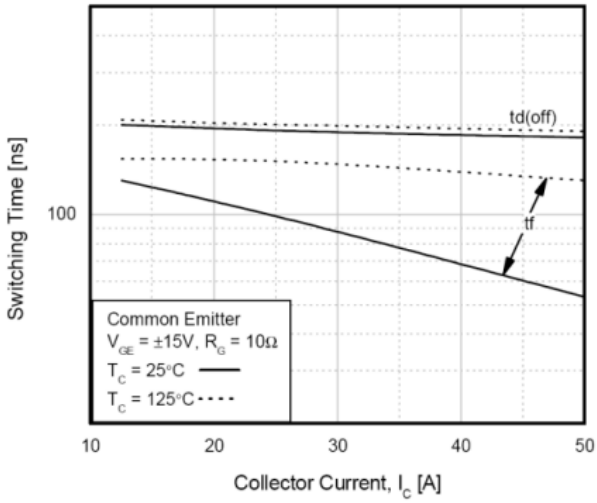
7.Turn-Off Characteristics vs. Gate Resistance



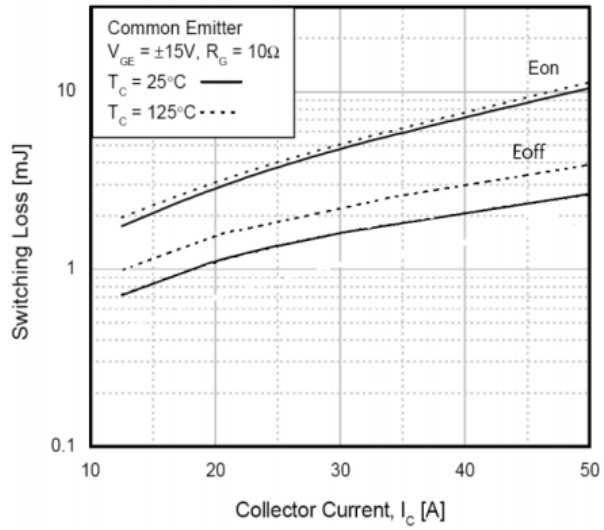
8.Switching Loss vs. Gate Resistance



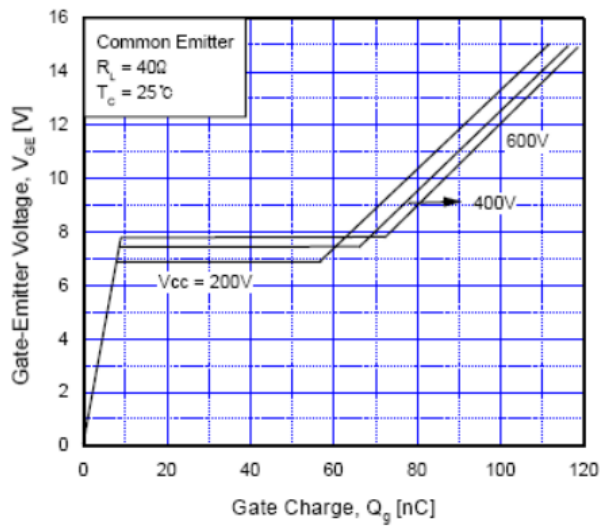
9.Turn-On Characteristics vs. Collector Current



10.Turn-Off Characteristics vs. Collector Current

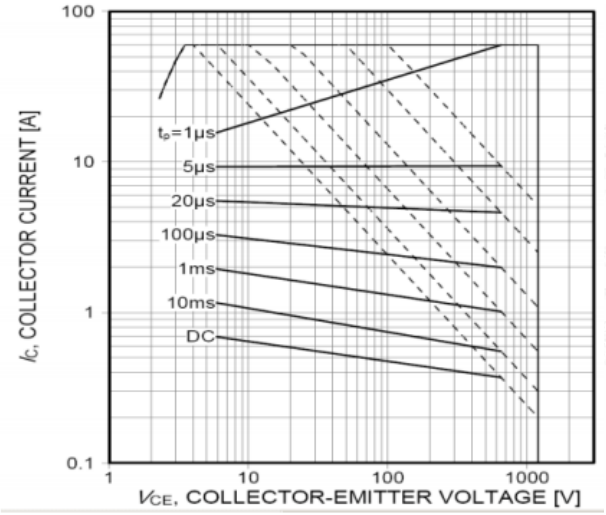


11.Switching Loss vs. Collector Current

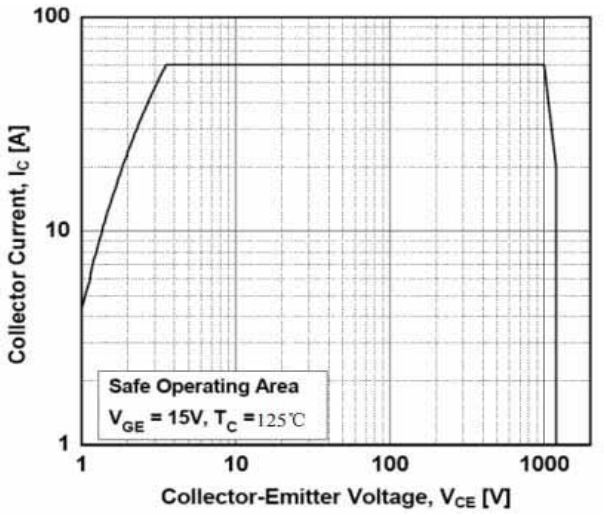


12.Gate Charge Characteristics

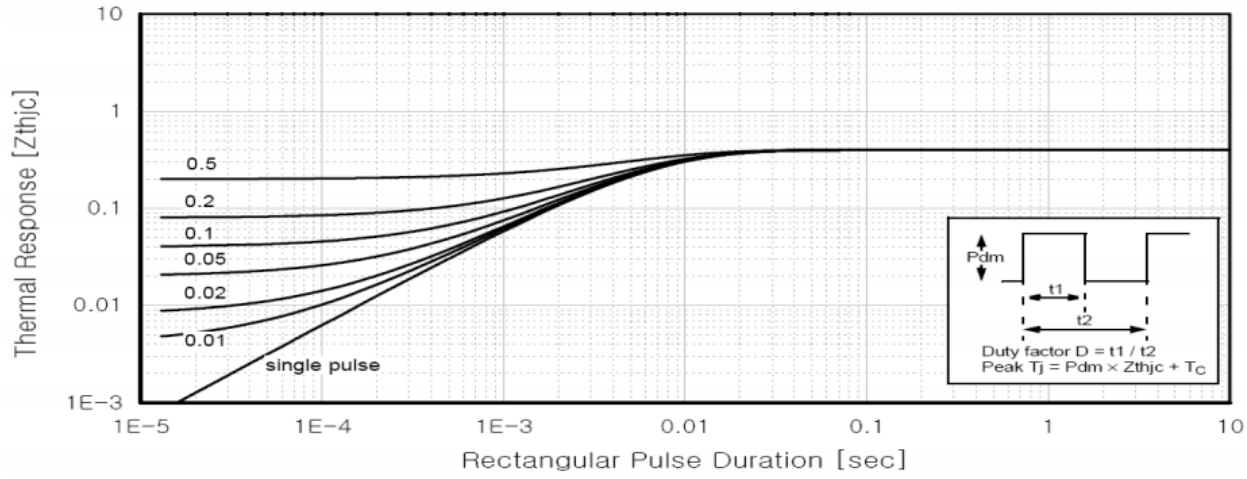
RATING AND CHARACTERISTICS CURVES (RI25N1200TP)



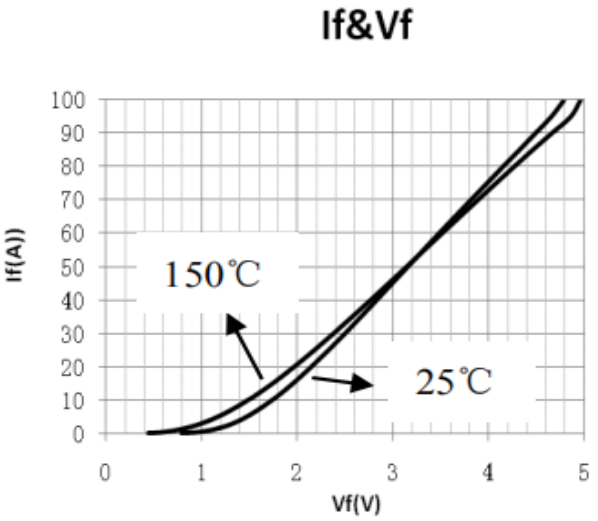
13.SOA Characteristics



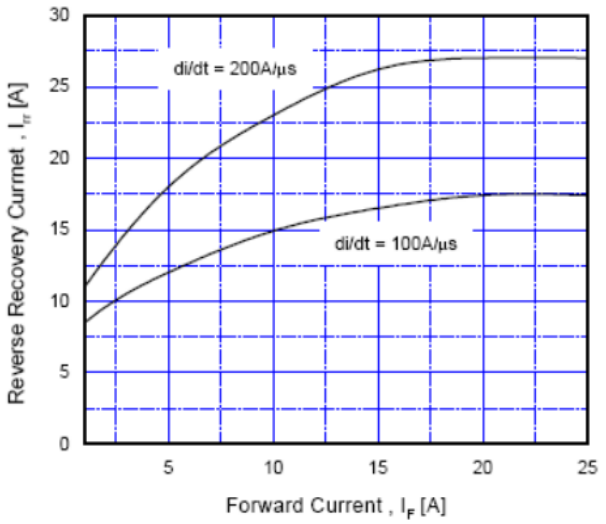
14.Turn-Off SOA



15.Transient Thermal Impedance

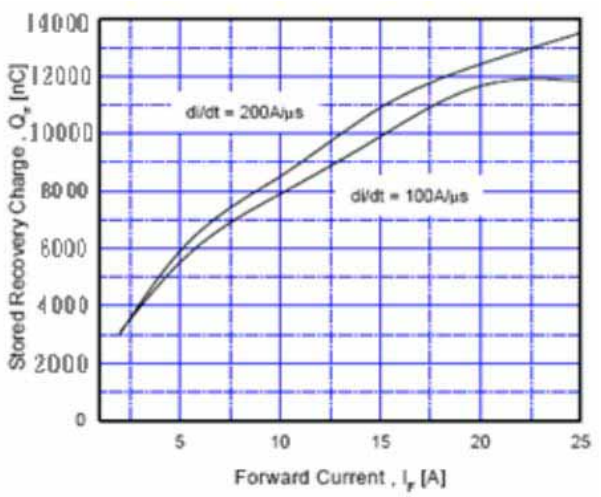


16.Forward Characteristics

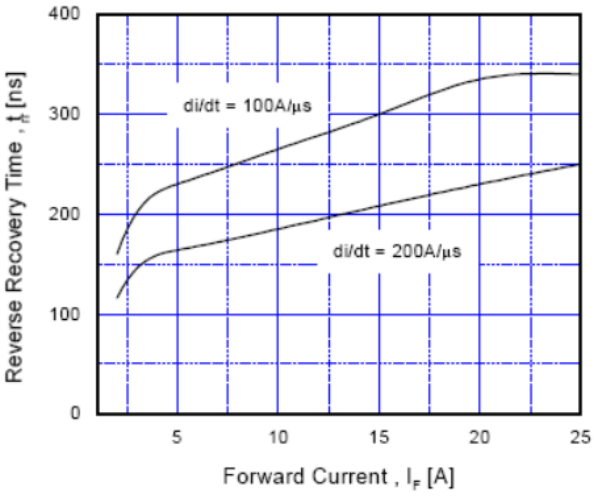


17.Reverse Recovery Current

RATING AND CHARACTERISTICS CURVES (RI25N1200TP)



18.Stored Charge

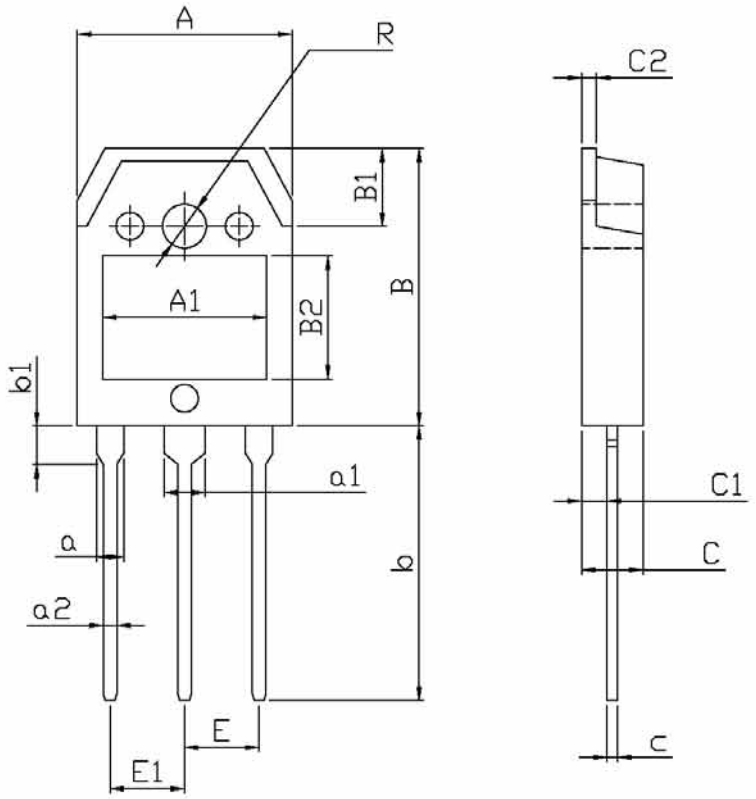


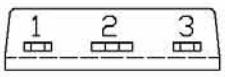
19.Reverse Recovery Time

Package Dimensions

TO-3P

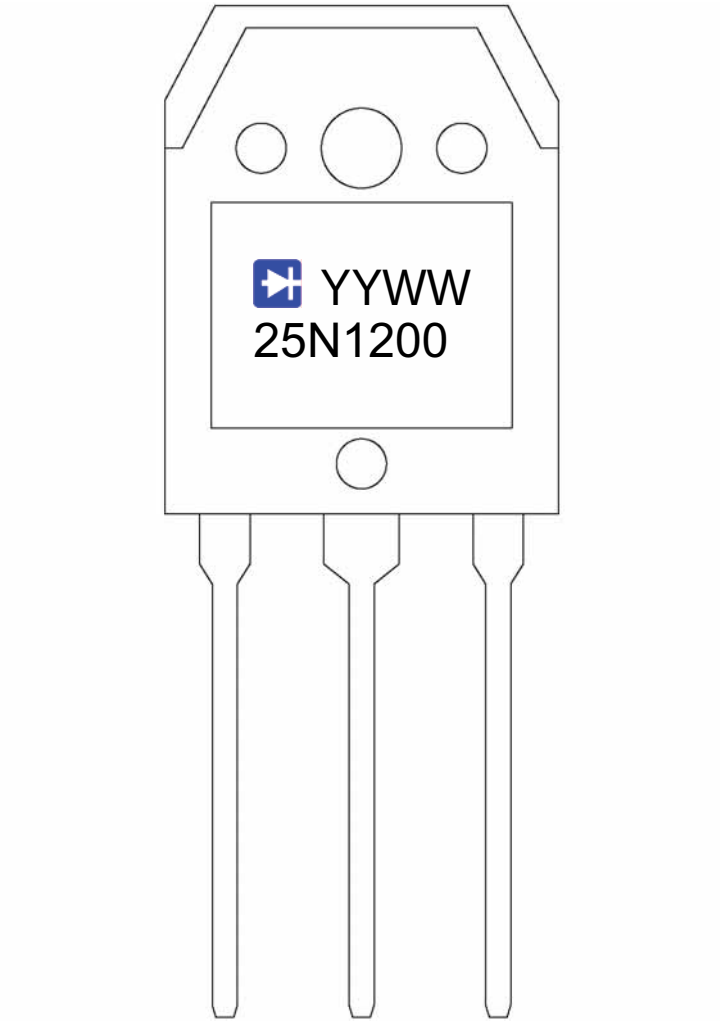
单位：mm





Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	15.4	16.0	a2	0.8	1.2
R	3.1	3.5	E	5.45	
B	19.8	20.8	E1	5.45	
B1	5.5	5.9	C	4.3	4.7
B2	9.0		C1	1.2	1.6
A1	12.0		C2	1.4	1.6
b	19.6	20.6	c	0.5	0.7
b1	3.0	3.4			
a	1.8	2.2			
a1	2.8	3.2			

Marking Instructions

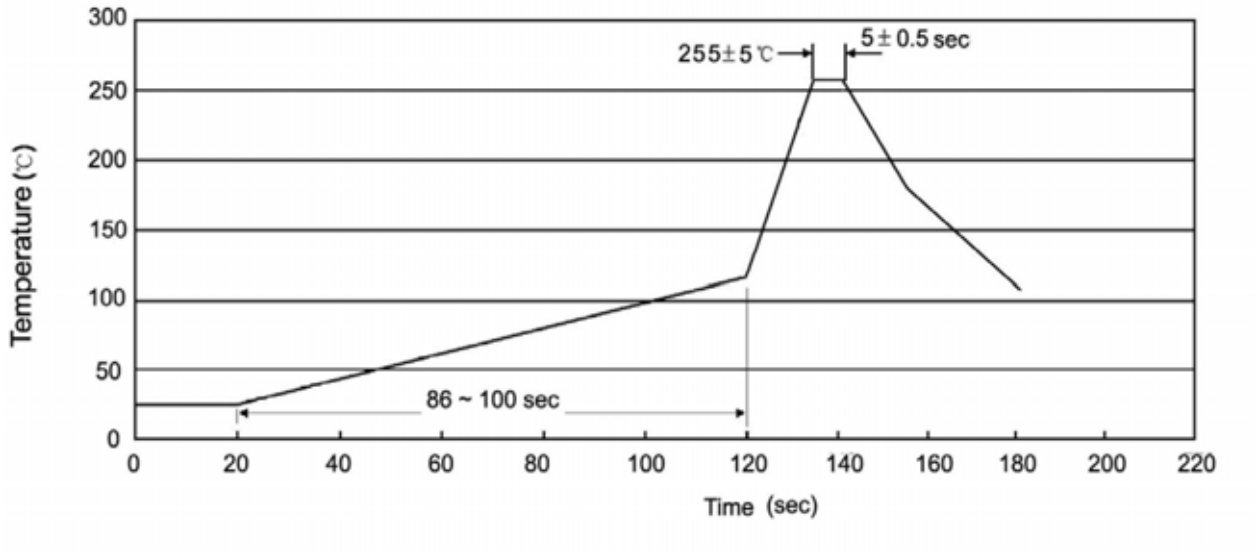


Note:

Logo+YYWW: Date Code.

25N1200(Product Type.)

Temperature Profile for Dip Soldering(Pb-Free)



N o t e :

1.Preheating:25~150℃, Time:60~90sec.

2.PeakTemp.:255±5℃, Duration:5±0.5sec.

3.Cooling Speed: 2~10℃/sec.

Resistance to Soldering Heat Test Conditions

Temp.:270±5℃ Time:10±1 sec

Packaging SPEC.

T U B E

Package Type	Units					Dimension		(unit: mm^3)
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-3P	30	15	450	5	2250	497.5×46×8	555×164×50	575×290×180

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