

/ Descriptions

TO-220F N

N-CHANNEL MOSFET in a TO-220F Plastic Package.

/ Features

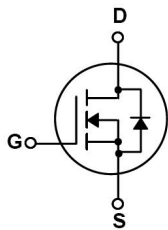
Ultra Low On-Resistance, fast switching, HF Product.

/ Applications

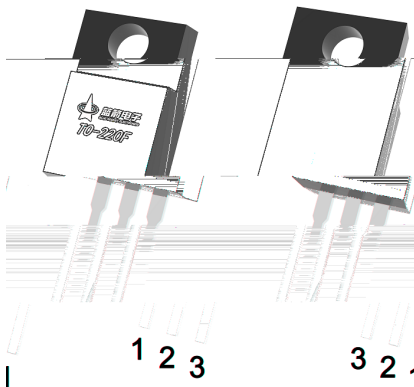
PFC

These devices are well suited for high efficient switched mode power supplies Active power factor correction, electronic lamp ballast based on half bridge topology.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Drain Current		$I_D(T_c=25)$	49	A
Pulsed Drain Current		I_{DM}	200	A
Gate-Source Voltage		V_{GS}	20	V
Single Pulsed Avalanche Energy L=0.5mH		E_{AS}	78.8	mJ
Avalanche Current		I_{AS}	15	A
Total Power Dissipation		$P_D(T_c=25)$	40	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	
Thermal Resistance-Junction to Ambient	t 10s	R_{JA}	10	/W
	Steady-State		38	
Thermal Resistance-Junction to Case	Steady-State	R_{JC}	3.1	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	100	108		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2	2.7	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20A$		7.2	8.5	m Ω
	$R_{DS(on)}$	$V_{GS}=6V$ $I_D=10A$		9.5	12	m Ω
Forward On Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1A$			1.2	V
Gate resistance	R_g	f=1MHz		2		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ f=1MHz		2250		pF
Output Capacitance	C_{oss}			1180		
Reverse Transfer Capacitance	C_{rss}			115		
Total Gate Charge	Q_g	$V_{GS}=10V$ $V_{DS}=50V$ $I_D=20A$		37		nC
Gate Source Charge	Q_{gs}			11.5		
Gate Drain Charge	Q_{gd}			5		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=50V$ $R_L=2.5\Omega$ $R_{GEN}=3\Omega$		13		ns
Turn-On Rise Time	t_r			8.5		
Turn-Off Delay Time	$t_{d(off)}$			29		
Turn-Off Fall Time	t_f			4		

/ Electrical Characteristic Curve

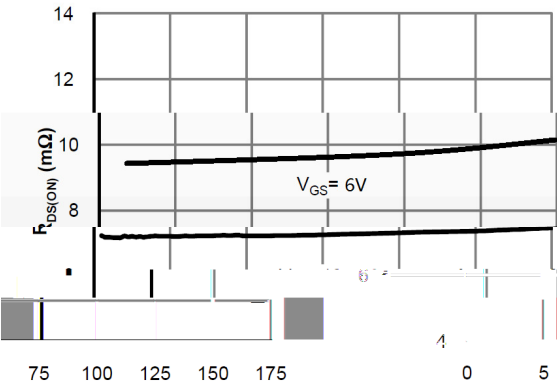
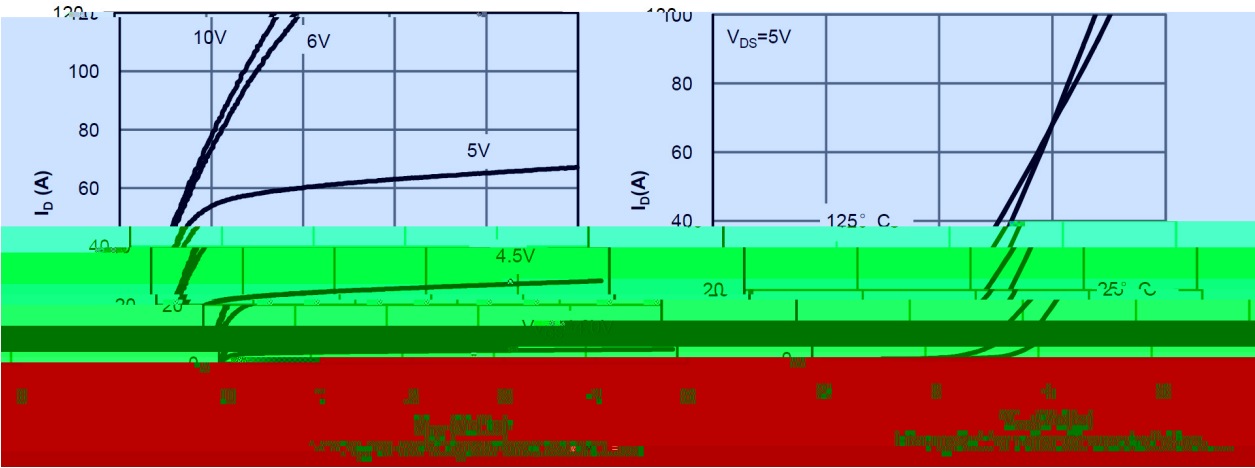


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

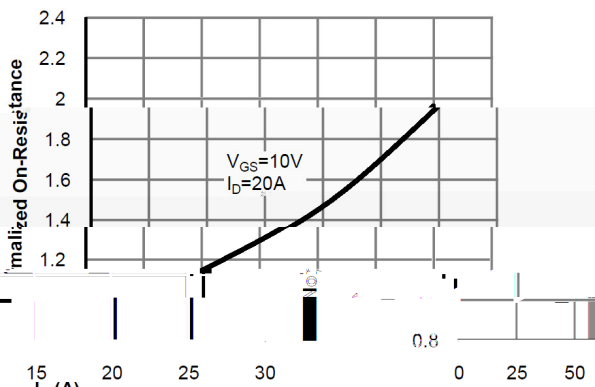


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

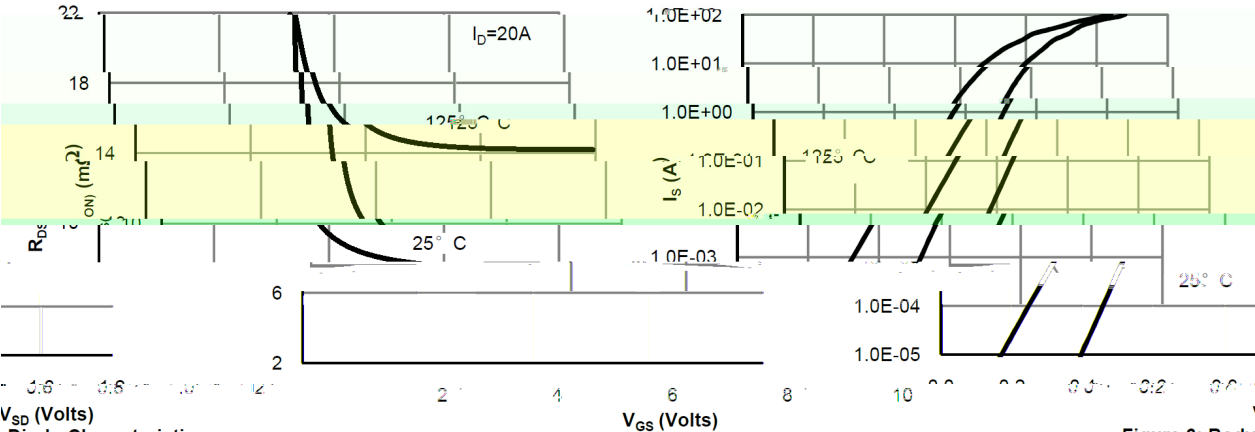
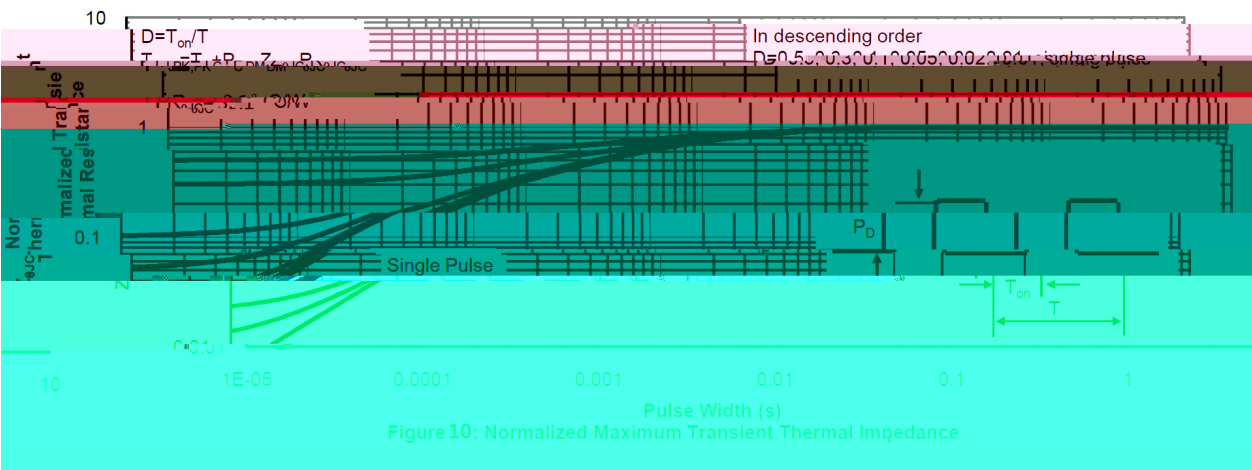
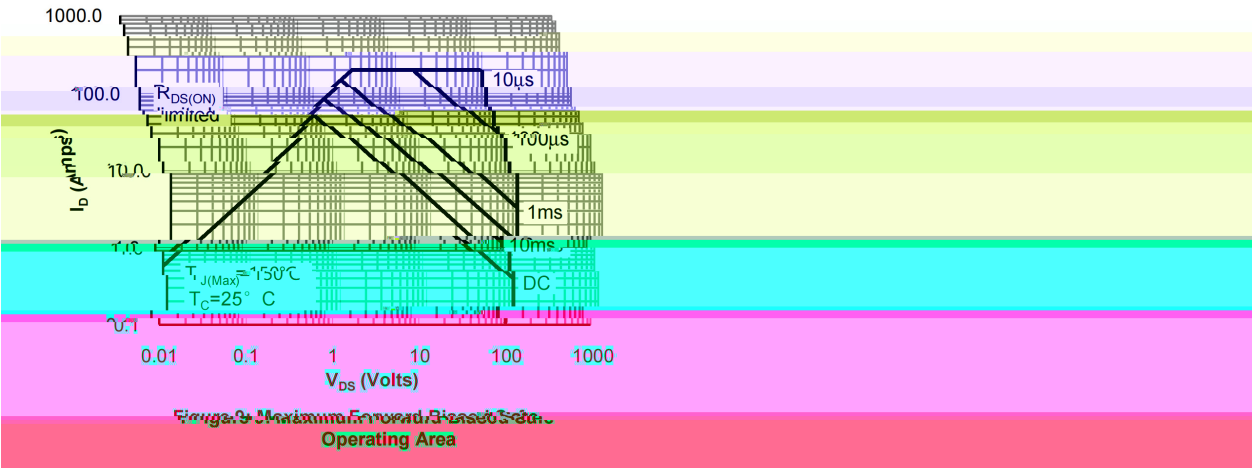
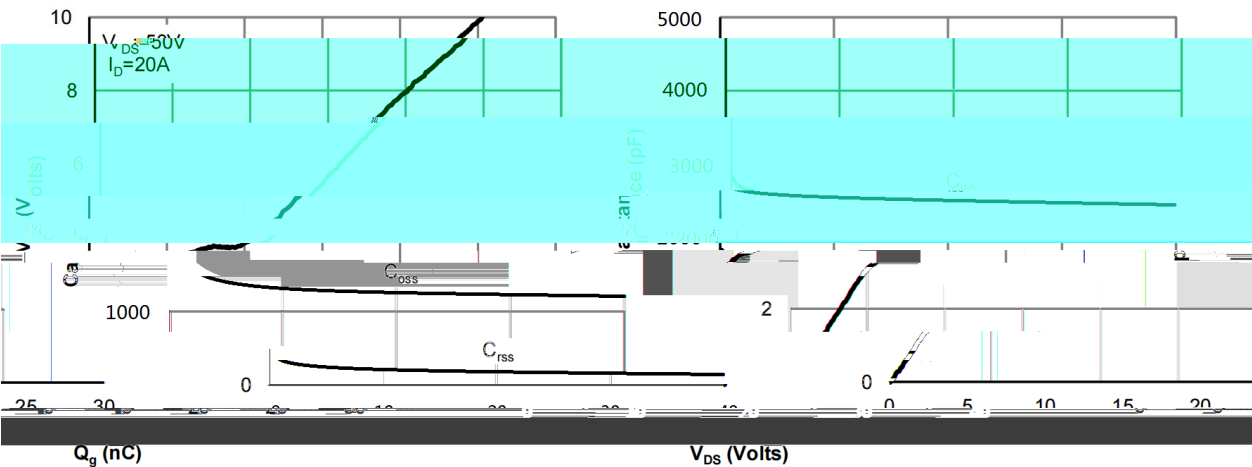
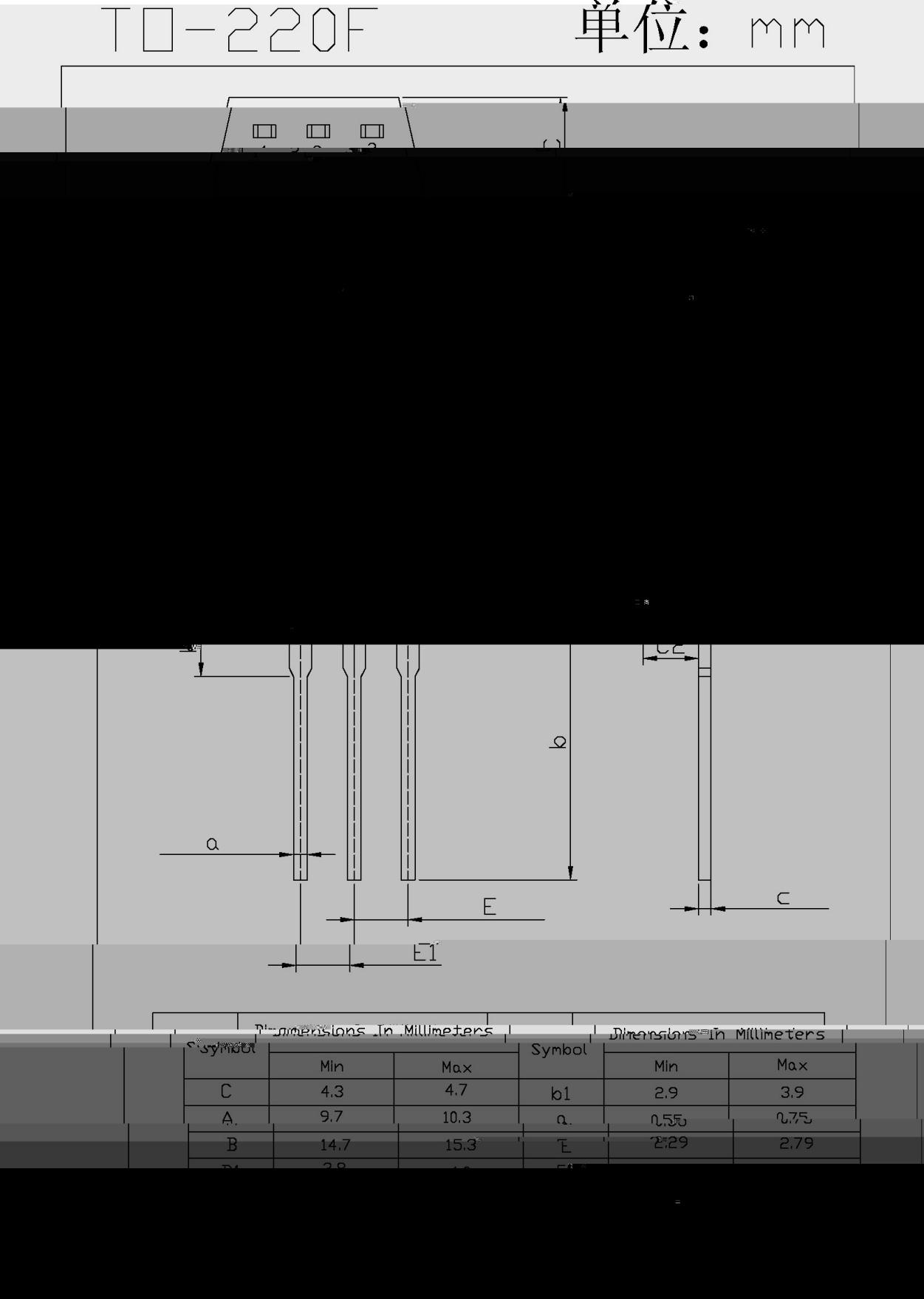


Figure 5: Diode Characteristics

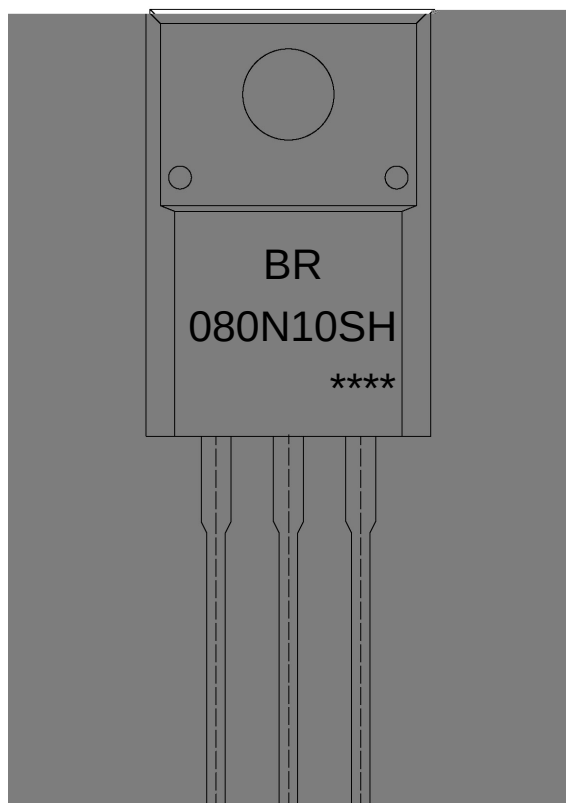
/ Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



BR

080N10SH

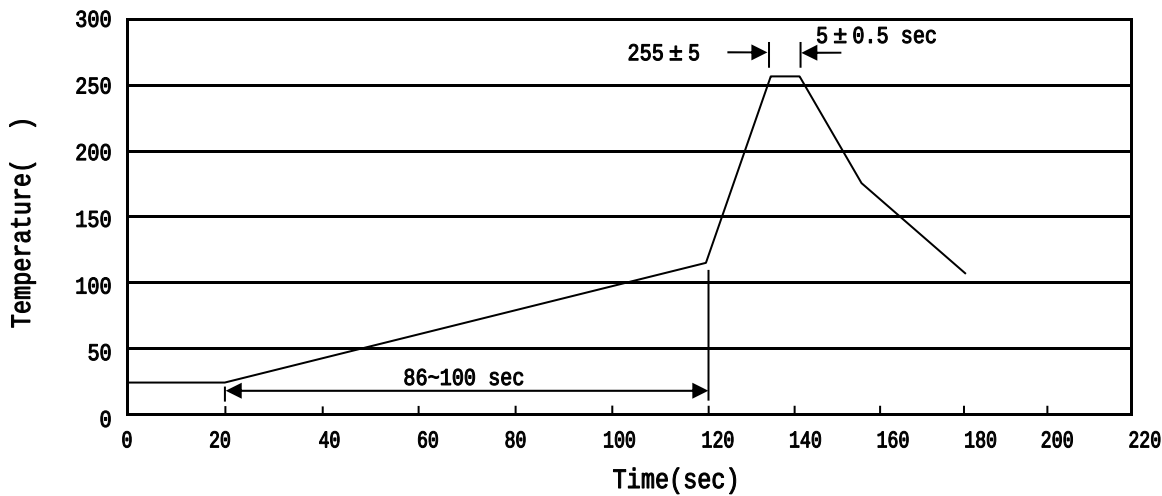
Note:

BR: Company Code

080N10SH: Product Type Code

****: 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 °C , Time:60~90sec. |
| 2 | 255±5 | 5±0.5sec; | 2.Peak Temp.:255±5 °C , Duration:5±0.5sec. |
| 3 | 2 10 | /sec. | 3. Cooling Speed: 2~10 °C /sec. |

/ Resistance to Soldering Heat Test Conditions

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

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

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-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices