

/ Descriptions

TOLL-8L N

N-Channel MOSFET in a TOLL-8L Plastic Package .

/ Features $V_{DS}(V)=100V$ $I_D=330A$ $R_{DS(ON)}@10V \leq 1.5m\Omega$ (Typ.1.2m Ω)

AEC-Q101

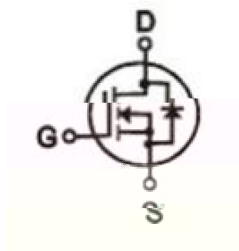
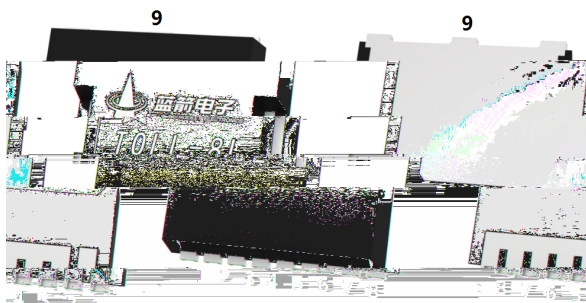
Qualified to AEC-Q101 Standards for High Reliability,

HF Product.

/ Applications

DC/DC

DC/DC converter, Power switch, Motor drives, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit**/ Pinning**

PIN1	G	PIN2	3	4	5	6	7	8	S	PIN9	D
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/ Marking

See Marking Instructions.

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Drain Current - Continuous		I_D	330	A
Drain Current – Pulsed		I_{DM}	1320	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		P_{tot}	431	W
Single Pulse Avalanche Energy($V_{DS}=75\text{V}, V_{GS}=10\text{V}, L=0.3\text{mH}$)		E_{AS}	540	mJ
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	
Thermal resistance, junction - ambient	Steady-State	$R_{\theta JA}$	40	/ W
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	0.29	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.2	3.0	3.8	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=100\text{A}$		1.2	1.5	$\text{m}\Omega$
Diode Forward Voltage	V_{SD}	$I_S=100\text{A}, V_{GS}=0\text{V}$		0.85	1.1	V
Gate Resistance	R_g	$f=1\text{MHz}$		1		Ω
Input Capacitance	C_{iss}	$V_{DS}=50\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		15800		pF
Output Capacitance	C_{oss}			1930		
Reverse Transfer Capacitance	C_{rss}			75		
Total Gate Charge	Q_g	$V_{GS}=10\text{V}, I_D=100\text{A}, V_{DS}=50\text{V}$		260		nC
Gate Source Charge	Q_{gs}			75		
Gate Drain Charge	Q_{gd}			76		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=6\Omega$ $I_D=100A$		81		ns
Turn-On Rise Time	t_r			178		
Turn-Off Delay Time	$t_{d(off)}$			167		
Turn-Off Fall Time	t_f			68		
Reverse Recovery Time	t_{rr}	$I_{DS}=50A,$ $V_{DS}=50V$ $di/dt=100 A/\mu s$		92		ns
Reverse Recovery Charge	Q_{rr}			200		nC

/ Electrical Characteristic Curve

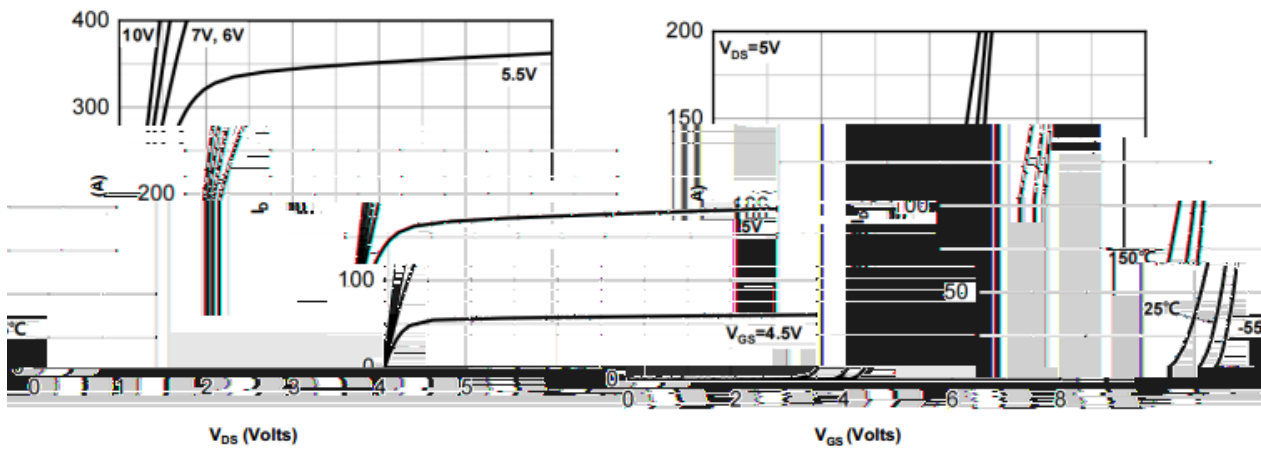


Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics

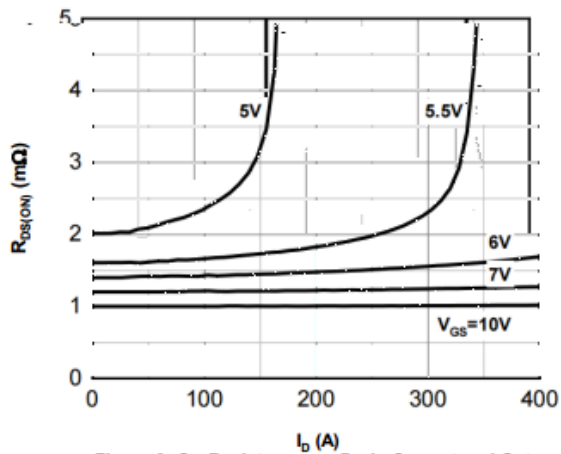


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

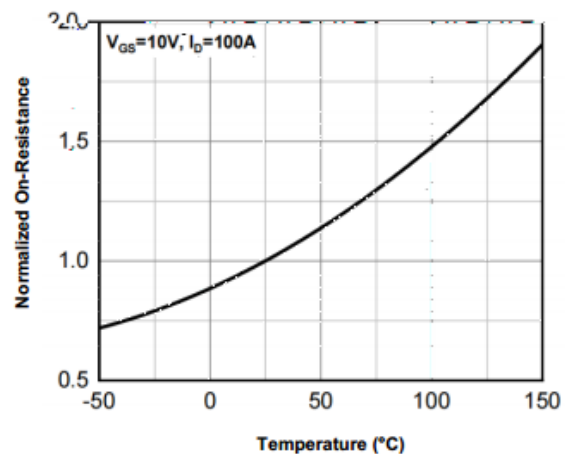


Figure 4: On-Resistance vs. Junction Temperature

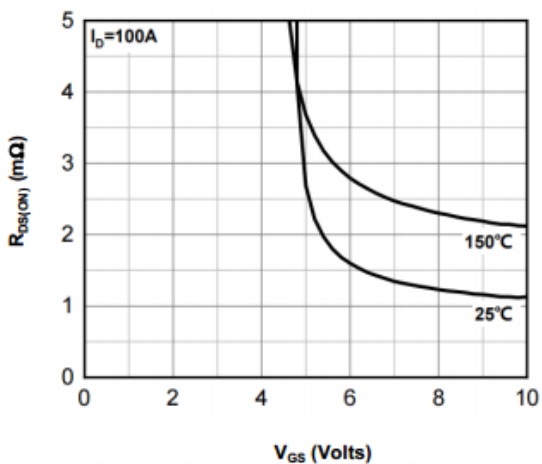


Figure 5: On-Resistance vs. Gate-Source Voltage

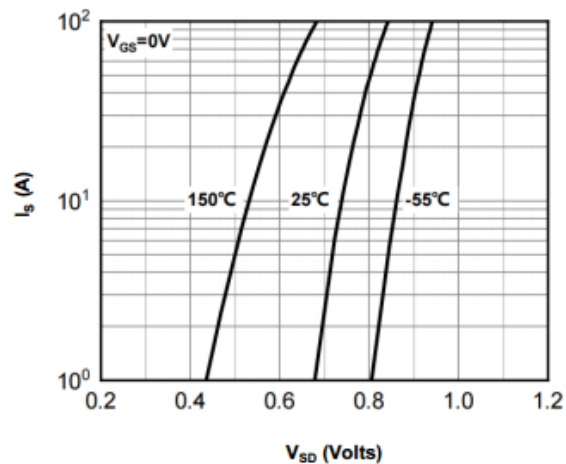
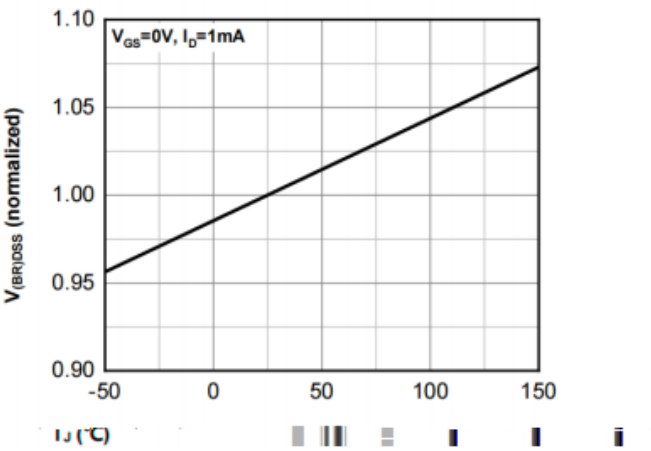
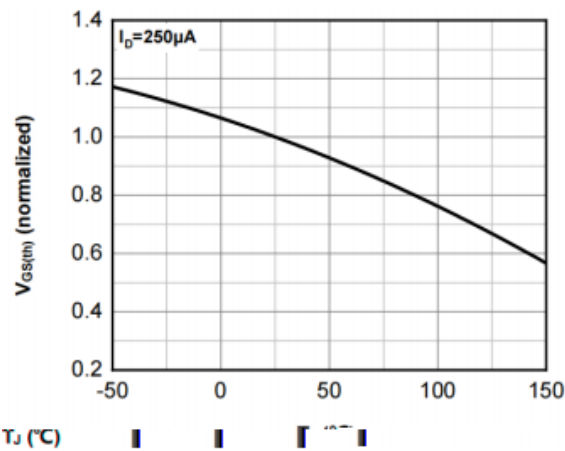
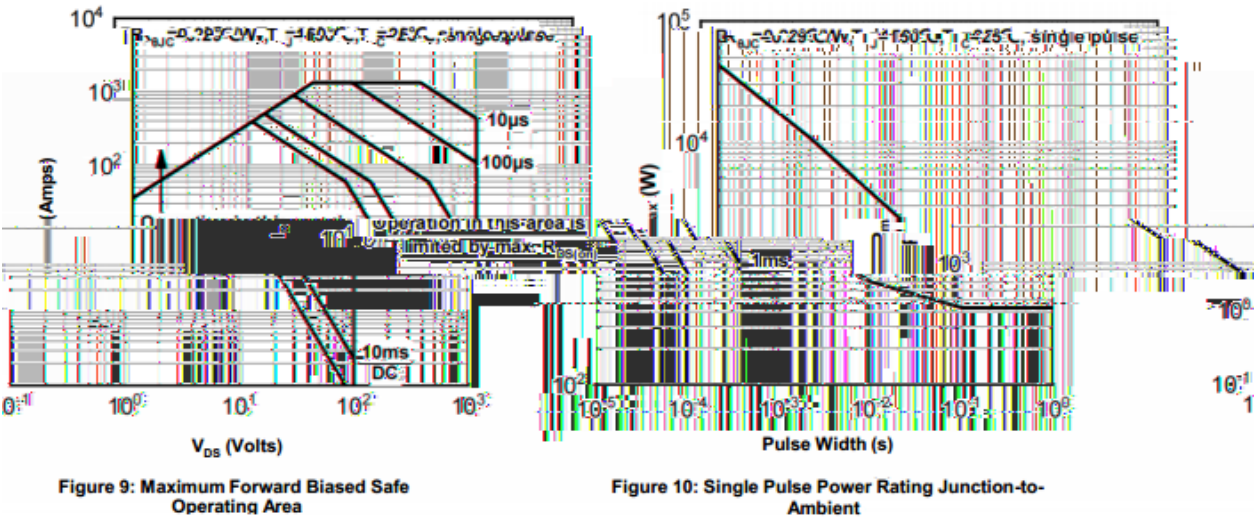
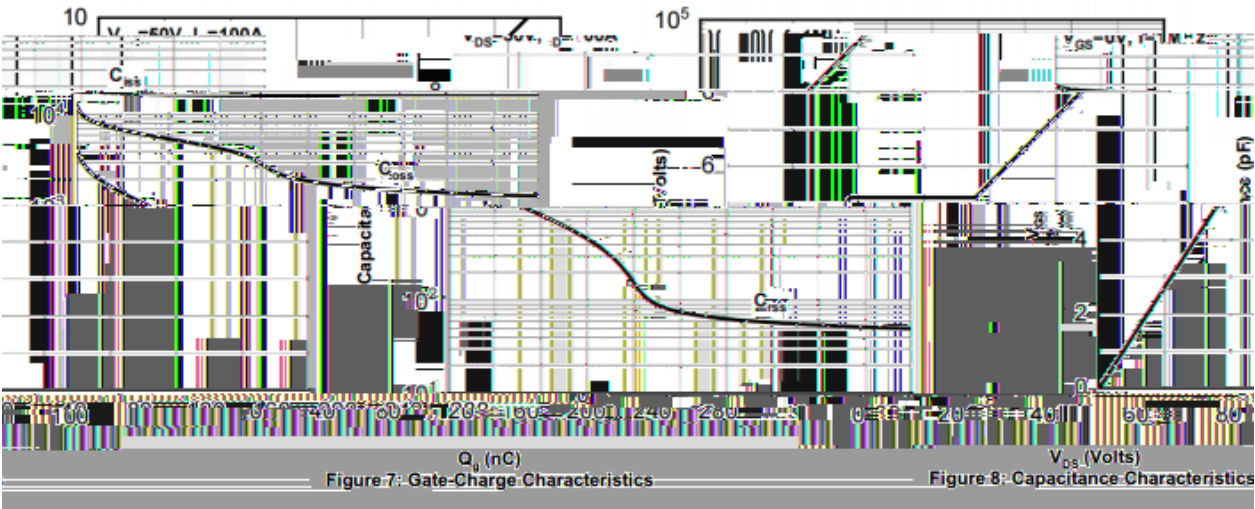


Figure 6: Body Diode Characteristics

/ Electrical Characteristic Curve



and $V_{(BR)DSS}$ vs. Junction Temperature

Figure 11: Normalized $V_{GS(th)}$ vs. Junction Temperature

Figure 12: Normalized $V_{(BR)DSS}$ vs. Junction Temperature

/ Electrical Characteristic Curve

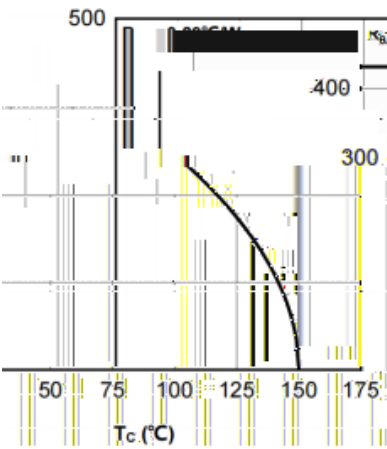


Figure 12: Max. Continuous Drain Current vs. Case Temperature

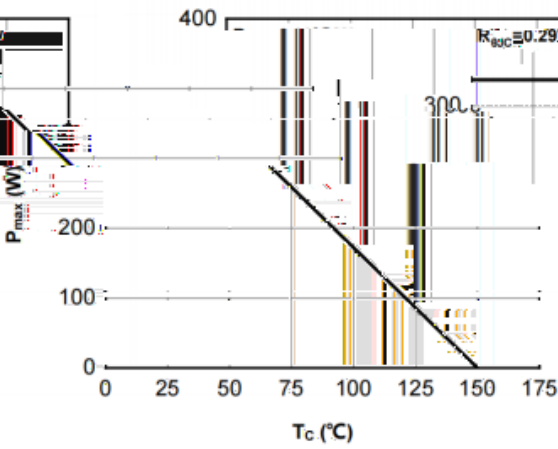


Figure 13: Max. Power Dissipation vs. Case Temperature

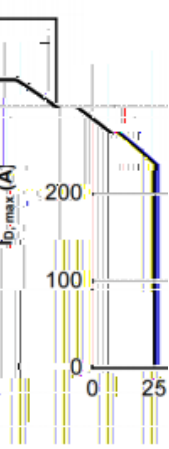


Figure 14

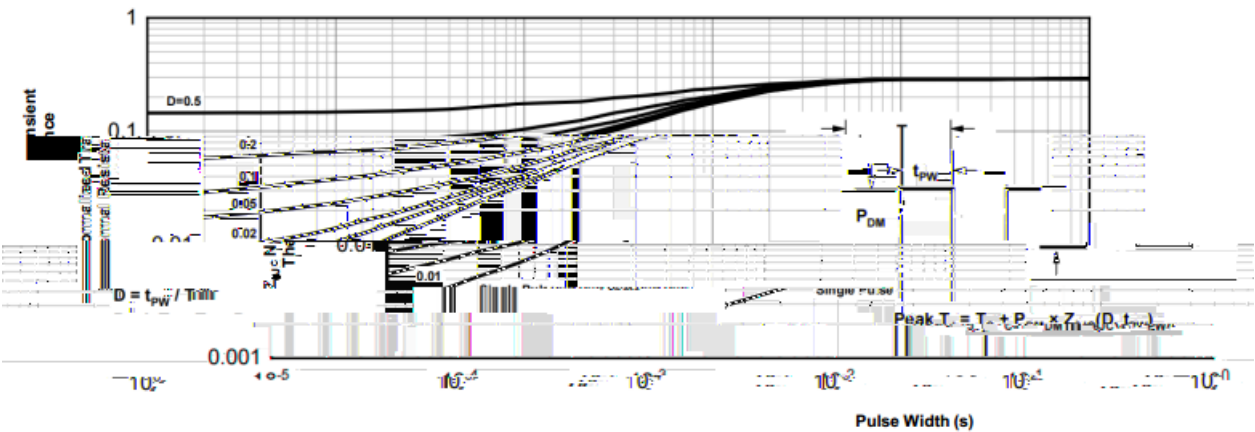
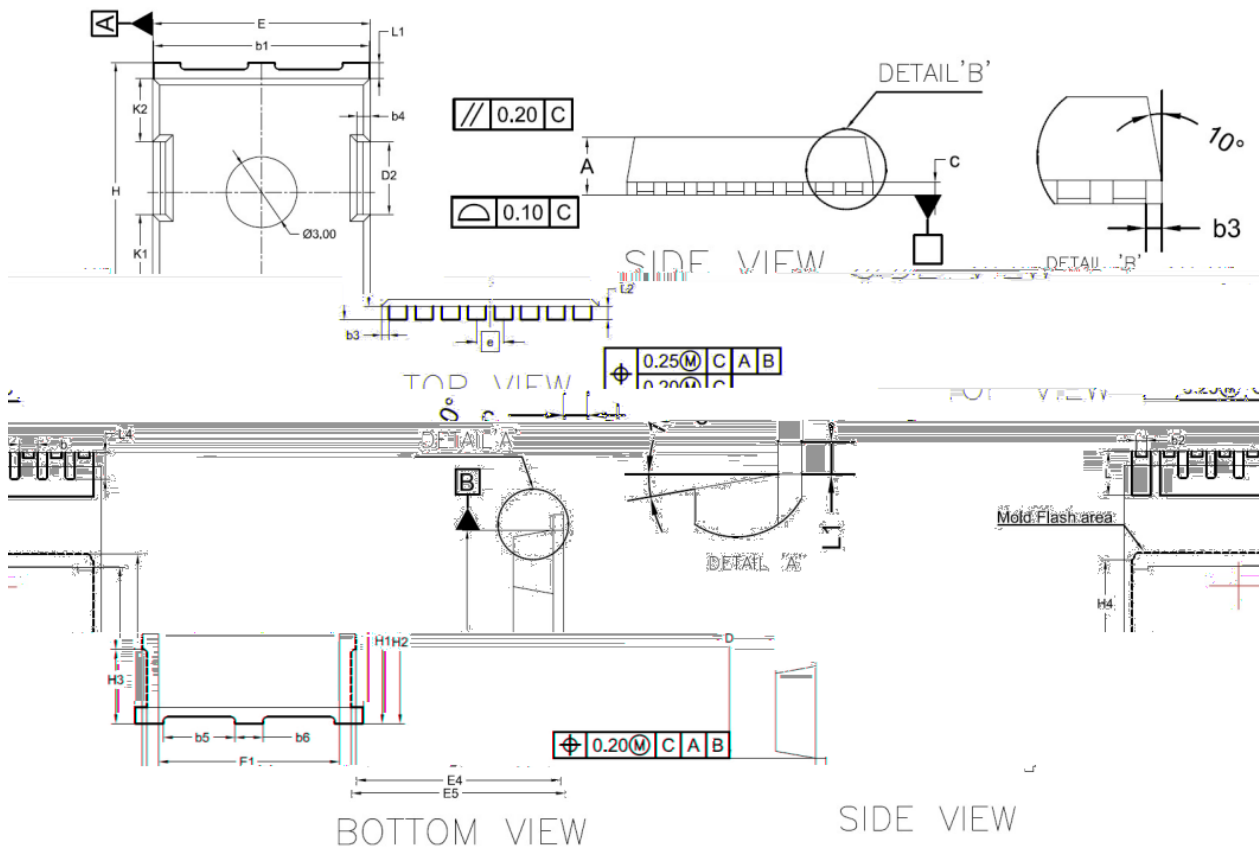


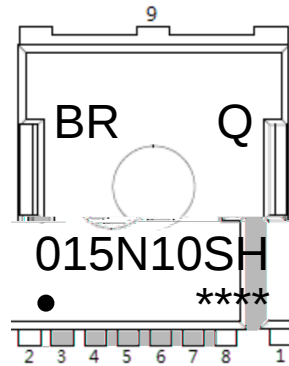
Figure 15: Maximum Allowable Pulse Power vs. Pulse Width

/ Package Dimensions



Symbol	Dimensions In Millimeters			Symbol	Dimensions In Millimeters		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	2.200	2.300	2.400	b1	9.700	9.800	9.900
c	0.492	0.500	0.508	b1	0.420	0.460	0.500
D	10.280	10.380	10.480	b3	0.350		
E	9.800	9.900	10.000	b4	0.600		
e	1.20 BSC			b5	3.100		
H	11.580	11.680	11.780	b6	1.200		
H1	6.650	6.750	6.850	L	1.700	1.900	2.100
H2	7.300			L1	0.700		
H3	3.200			L2	0.600		
H4	3.800			L4	1.050	1.150	1.250
K1	4.180			L5	0.500	0.600	0.700
K2	2.900			E1	7.800		
D2	3.300			E4	8.800		
b	0.700	0.800	0.900	E5	9.200		

/ Marking Instructions



BR

Q

015N10SH

Note

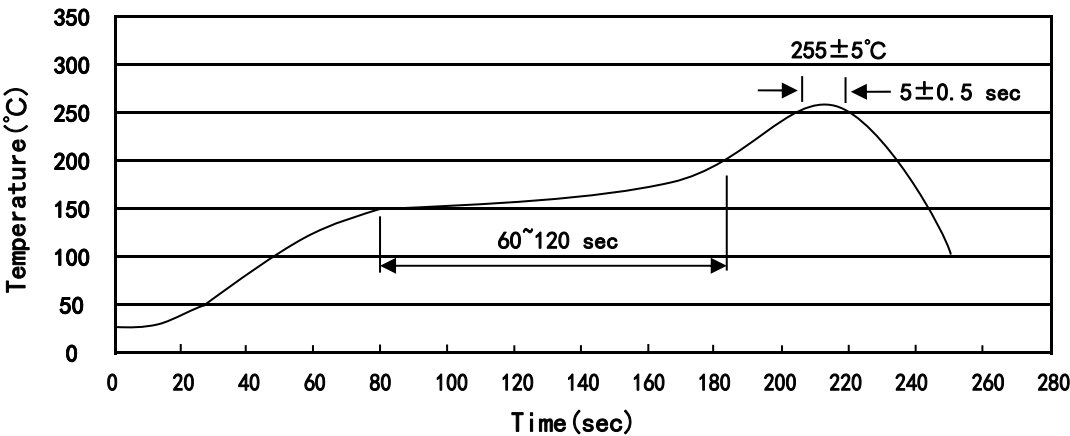
BR Company Code

Q: Automobile halogen-free product Code

015N10SH Product Type Code

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

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 200

60 120sec;

1.Preheating:150~200 , Time:60~120sec.
- 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

260±5 10±1 sec. Temp.:260±5℃ Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
TOLL-8L	2,000	1	2,000	6	12,000	13"×24	360×360×50	380×335×366

/ Notices