/ Descriptions

TO-251 P MOS P-CHANNEL MOSFET in a TO-251 Plastic Package.

/ Features

$R_{DS(on)}$ C_{rss}

Low $R_{DS(on)}$,low gate charge, low C_{rss}, fast switching.

/ Applications

DC/DC

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

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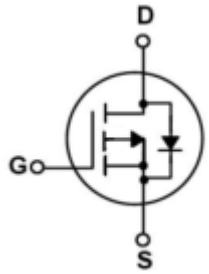
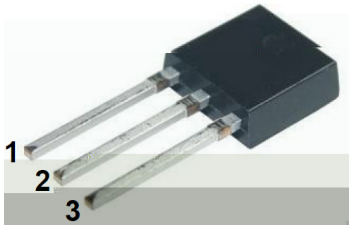
/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ h_{FE} Classifications & Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-100	V
Drain Current	I_D(Tc=25)	-30	A
Drain Current	I_D(Tc=100)	-21.5	A
Drain Current - Pulsed [C]	I_{DM}	-80	A
Gate-Source Voltage	V_{GS}	±20	V
Avalanche Current [C]	I_{AS}	-27.0	A
Avalanche energy L=0.5mH [C]	E_{AS}	291.6	mJ
Power Dissipation [B]	P_D(Tc=25)	53.5	W
	P_D(Tc=100)	26.5	W
Power Dissipation [A]	P_{DSM}(T_A=25)	2.5	W
	P_{DSM}(T_A=70)	1.6	W
Junction and Storage Temperature Range	T_j T_{stg}	-55 150	℃

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250 A	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V V_{GS}=0V			-1.0	A
		V_{DS}=-100V V_{GS}=0V T_J=55°C			-5.0	A
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250 A	-1	-1.7	-3	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	V_{GS}=-10V I_D=-30A		46	50	m
	$R_{DS(on)2}$	V_{GS}=-4.5V I_D=-15A		49	51	m
Forward Transconductance	g_{FS}	V_{DS}=-10V I_D=-10A		25		S
Diode Forward Voltage	V_{SD}	I_S=-30A V_{GS}=0V		-0.72	-1.3	V

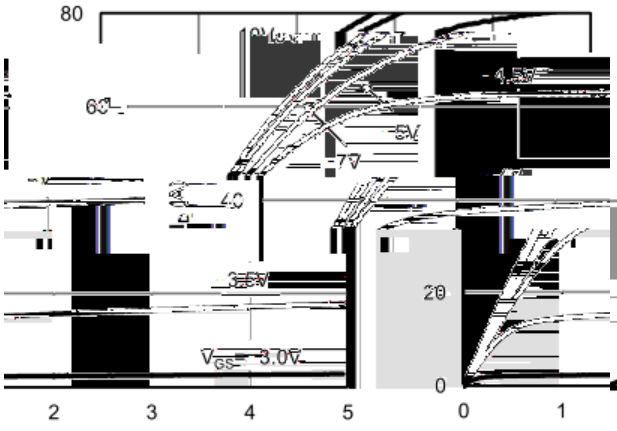
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=-25V V_{GS}=0V f=1.0MHz		5110		pF
Output Capacitance	C_{oss}			198		
Reverse Transfer Capacitance	C_{rss}			131		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		3.87		
Total Gate Charge	Q_g(10V)	V_{GS}=-10V V_{DS}=-50V I_D=-20A		16.5	25	nC
Total Gate Charge	Q_g(4.5V)			7	12	
Gate Source Charge	Q_{gs}			4.5		
Gate Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-10V V_{DS}=-50V R_L=2.5 R_{GEN}=23		7		ns
Turn-On Rise Time	t_r			8		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			3		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-20A dI/dt=500A/ms		30		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-20A dI/dt=500A/ms		145		nC
Maximum Junction-to-Ambient [A]	R_{JA}	t ≤ 10s		16	20	℃/W
Maximum Junction-to-Ambient [AD]		teady-State		41	50	℃/W
Maximum Junction-to-Case	R_{JC}	teady-State		2.2	2.8	℃/W

A. The value of R_{JA} is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation PDSM is based on R qJA and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.

B. The power dissipation PD is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

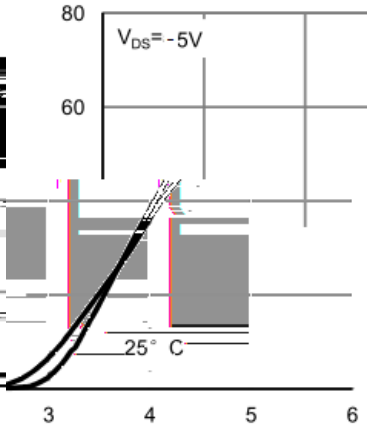
C. Repetitive rating, pulse width

/ Electrical Characteristic Curve



V_{DS} (Volts)
gion Characteristics

Fig 1: On-Re



V_{GS}(Volts)
sfer Characteristics

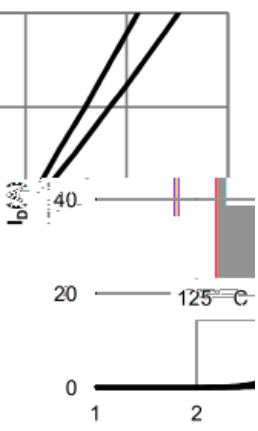
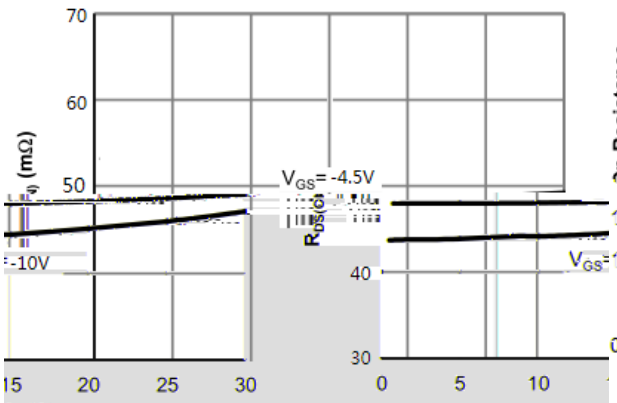
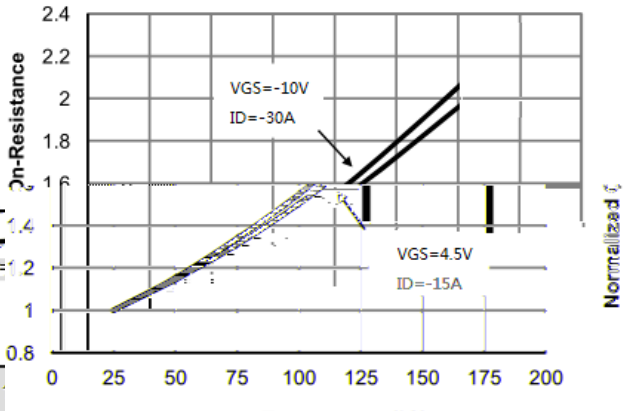


Figure 2: Trans



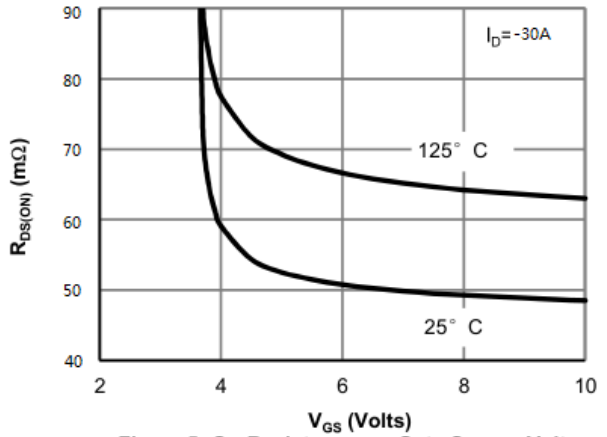
I_D (A)
e vs. Drain Current and Gate
ge

Figure 3: On-Resistanc
Volta

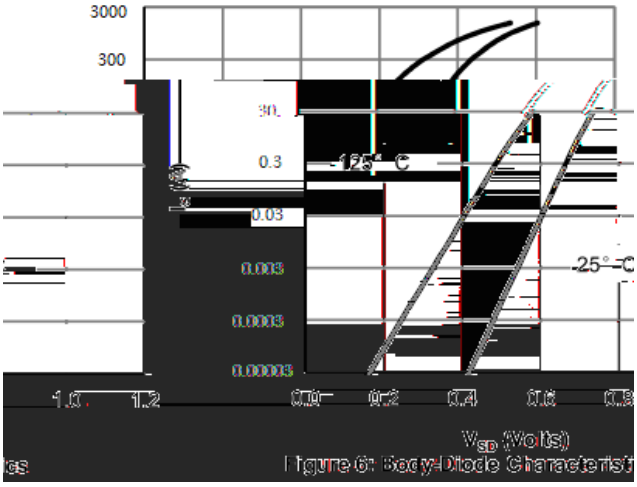


Temperature (°C)
Temperature

Figure 4: On-Resistance vs. Junction



V_{GS} (Volts)
Figure 5: On-Resistance vs. Gate-Source Voltage



V_{SD} (Volts)
Figure 6: Body Diode Characteristi

/ Electrical Characteristic Curve

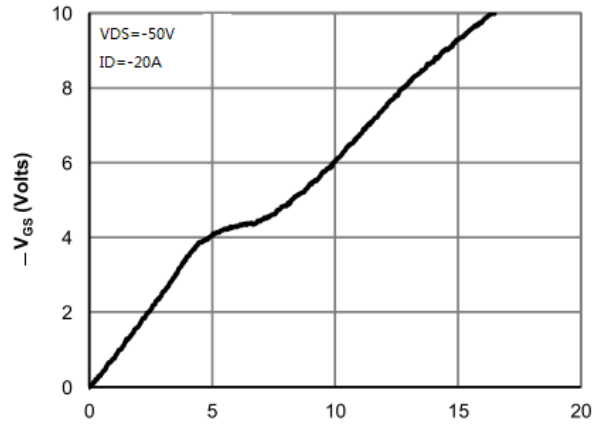
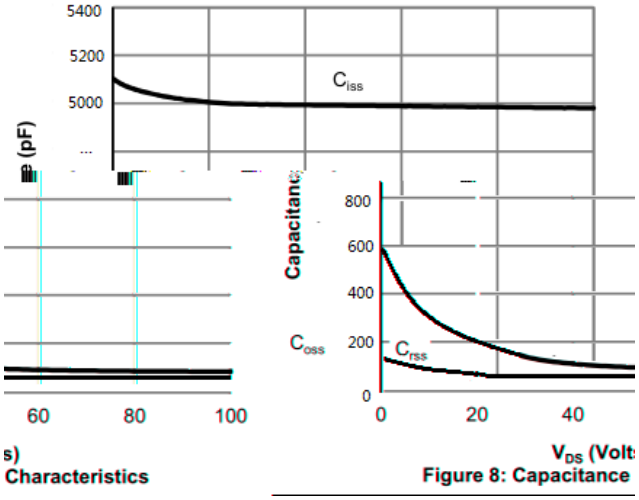


Figure 7: Gate-Charge Characteristics



s)
Characteristics

Figure 8: Capacitance

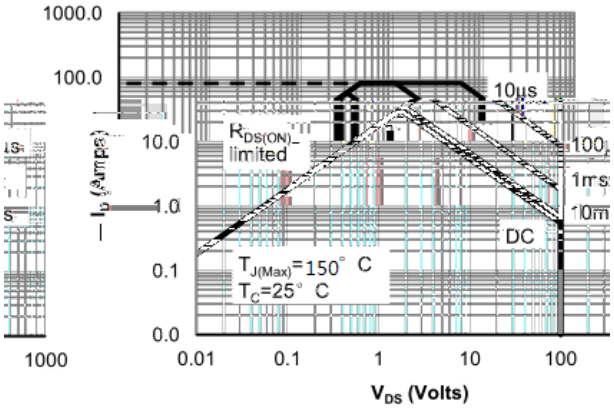
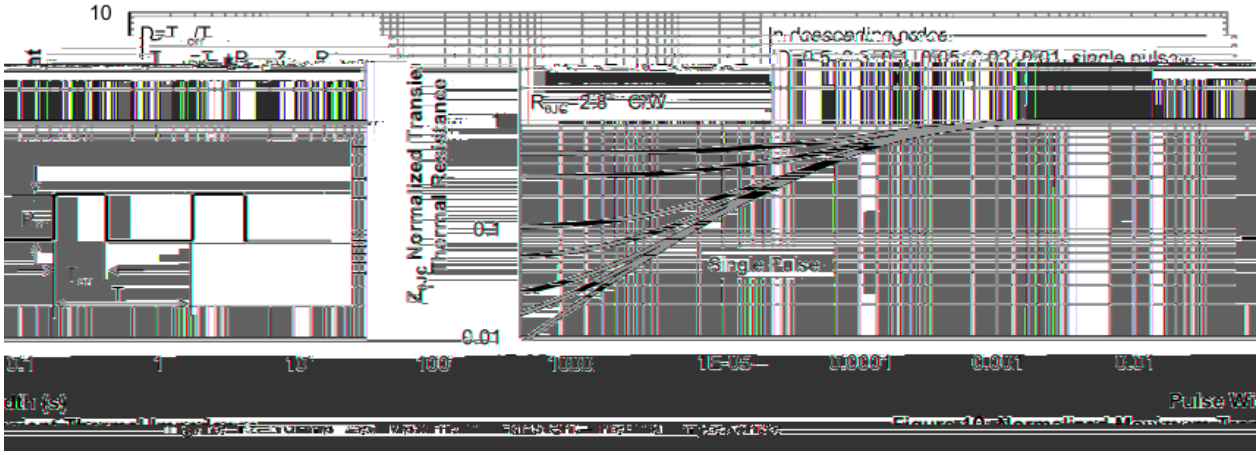
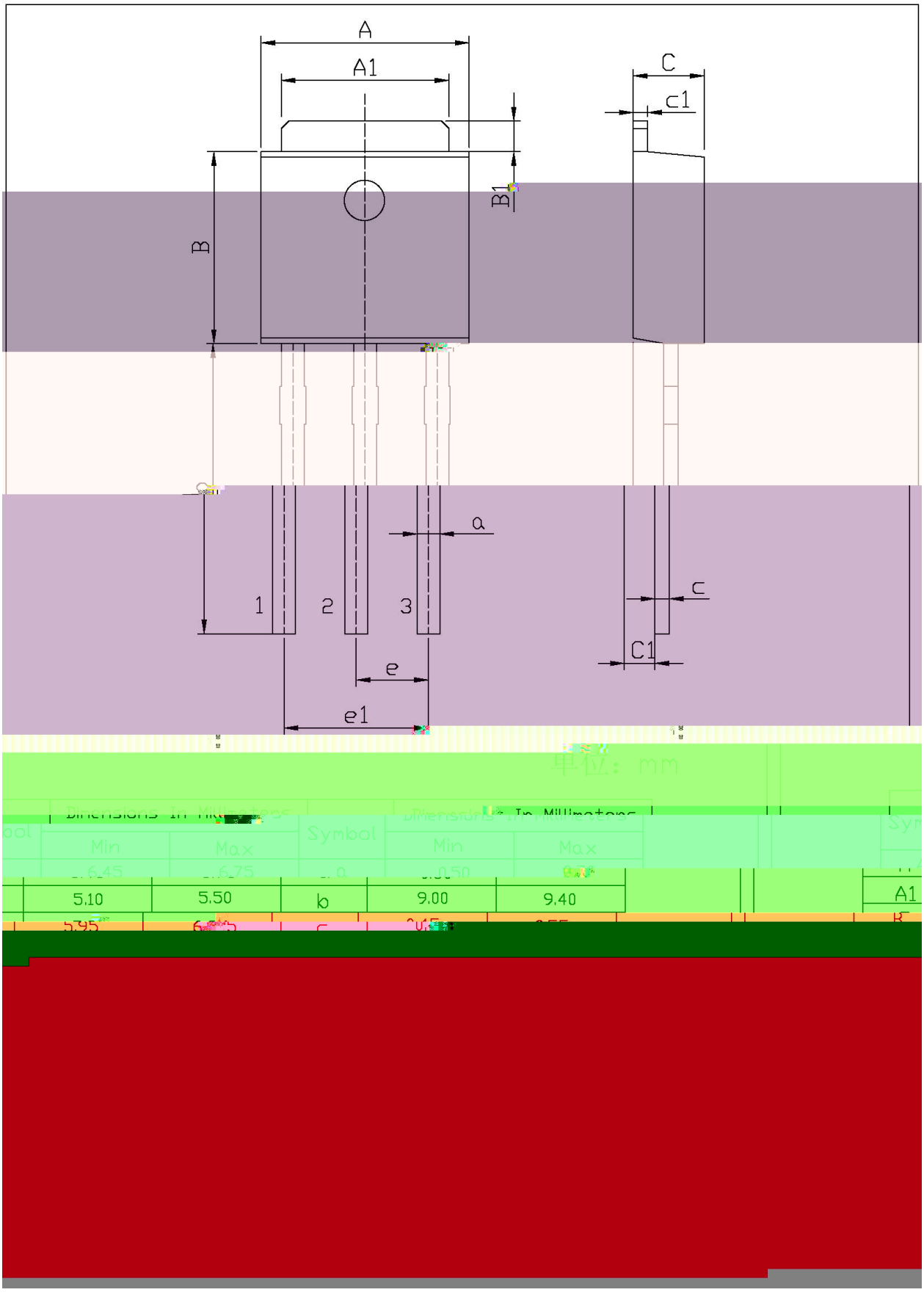


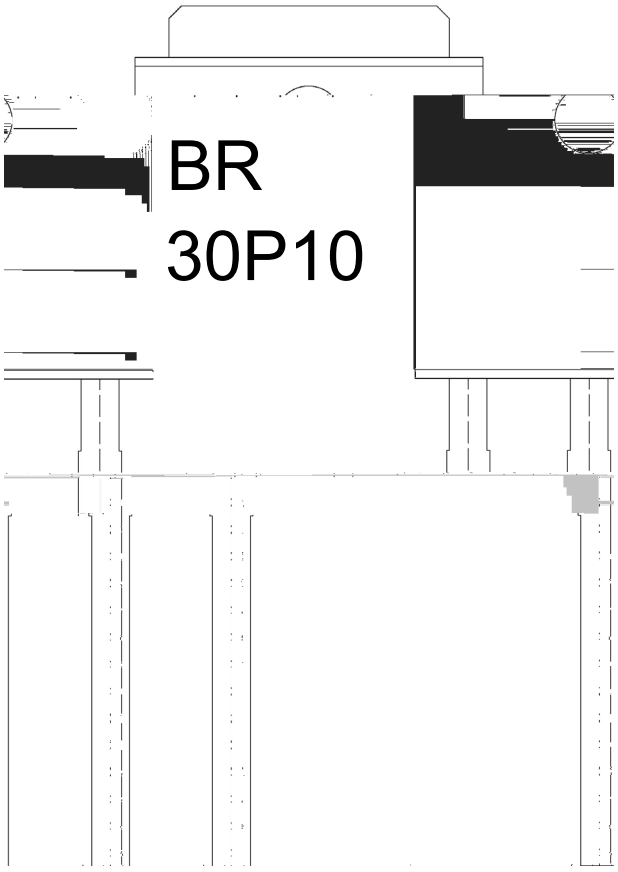
Figure 9: Maximum Forward Biased Safe Operating Area



/ Package Dimensions



/ Marking Instructions



BR

30P10

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Note:

BR:	Company Code
30P10:	Product Type Code.
****:	Lot No. Code, code change with Lot No.

( ) / Temperature Profile for IR Reflow 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.

/ REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱		盒	箱

/ TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	只 套管	套管 盒	只 盒	盒 箱	只 箱	套管	盒	箱

/ Notices