

/ Descriptions

TO-252

P

P-CHANNEL MOSFET in a TO-252 Plastic Package.

/ Features

 $V_{DS} (V) = -60V$ $I_D = -30A$ ($V_{GS} = \pm 20V$) $R_{DS(ON)} @ -10V \leq 35m\Omega$ (Typ.26m Ω) $R_{DS(ON)} @ -4.5V \leq 50m\Omega$ (Typ.31m Ω)

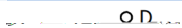
HF Product.

/ Applications

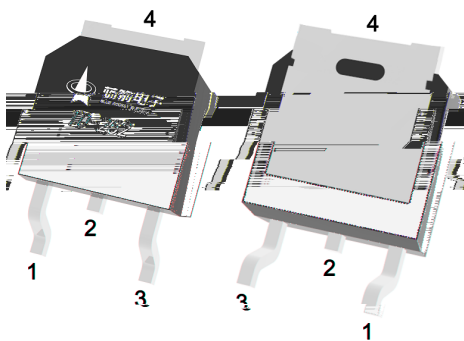
DC/DC

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

/ Equivalent Circuit




/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	$I_D (T_c=25^\circ\text{C})$	-30	A
Pulsed Drain Current	I_{DM}	-94.5	A
Avalanche Current	I_{AS}	-17.5	A
Avalanche energy $L=0.5\text{mH}$	E_{AS}	320	mJ
Power Dissipation for Single Operation	$P_D (T_c=25^\circ\text{C})$	50	W
Maximum Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance- Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$ $V_{GS}=0\text{V}$	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60\text{V}$ $V_{GS}=0\text{V}$			-1.0	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$ $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu\text{A}$	-1.0	-1.6	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10\text{V}$ $I_D=-20\text{A}$		26	35	m Ω
		$V_{GS}=-4.5\text{V}$ $I_D=-10\text{A}$		31	50	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$ $V_{GS}=0\text{V}$			-1.0	V
Gate Resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$				

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10V$ $V_{DS}=-30V$ $I_D=-6.2A$		46.5		nC
Total Gate Charge	$Q_{g(4.5V)}$			22.7		
Gate-Source Charge	Q_{gs}			9.1		
Gate-Drain Charge	Q_{gd}			9.2		
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$ $V_{DS}=-30V$ $R_L=4.7\Omega$ $R_{GEN}=3\Omega$		9.8		ns
Turn-on Rise Time	t_r			6.1		
Turn-off Delay Time	$t_{d(OFF)}$			44		
Turn-off Fall Time	t_f			12.7		

/ Electrical Characteristic Curve

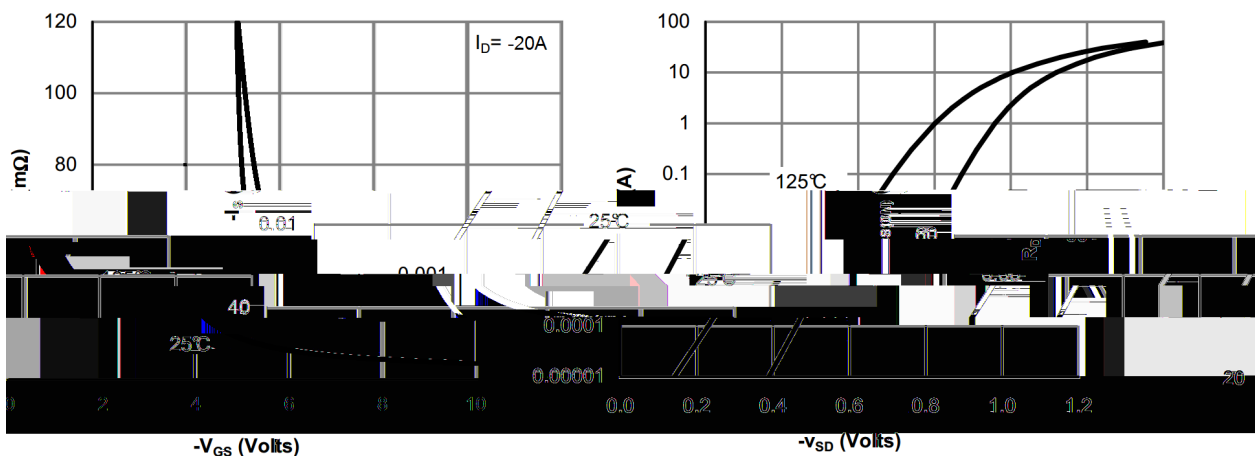
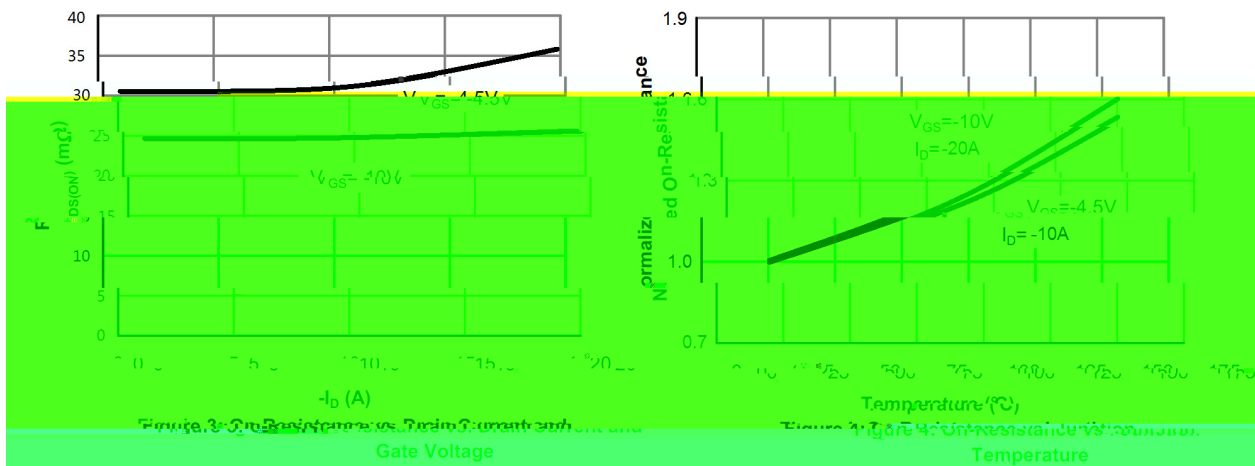
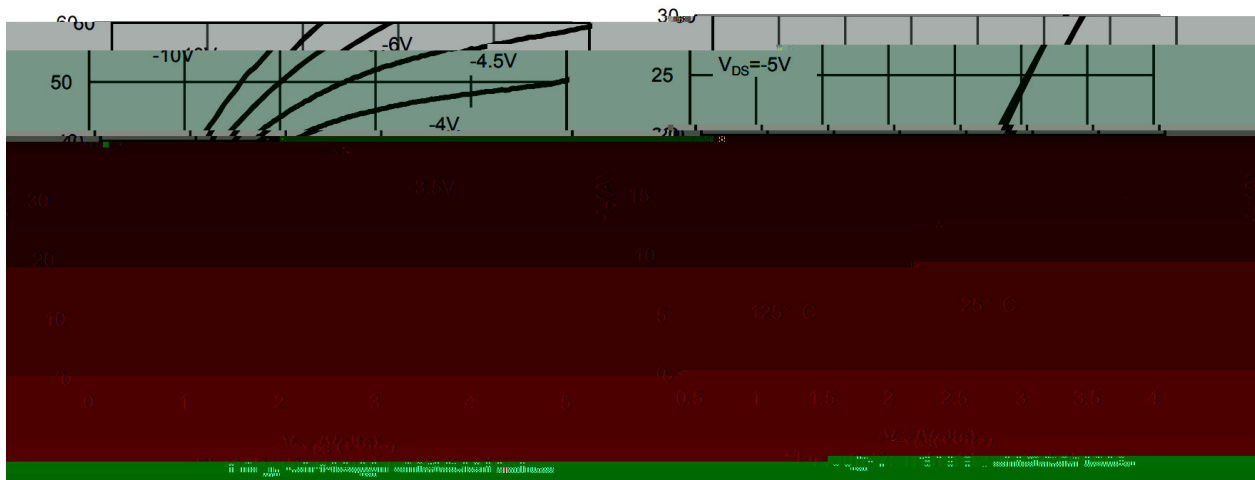
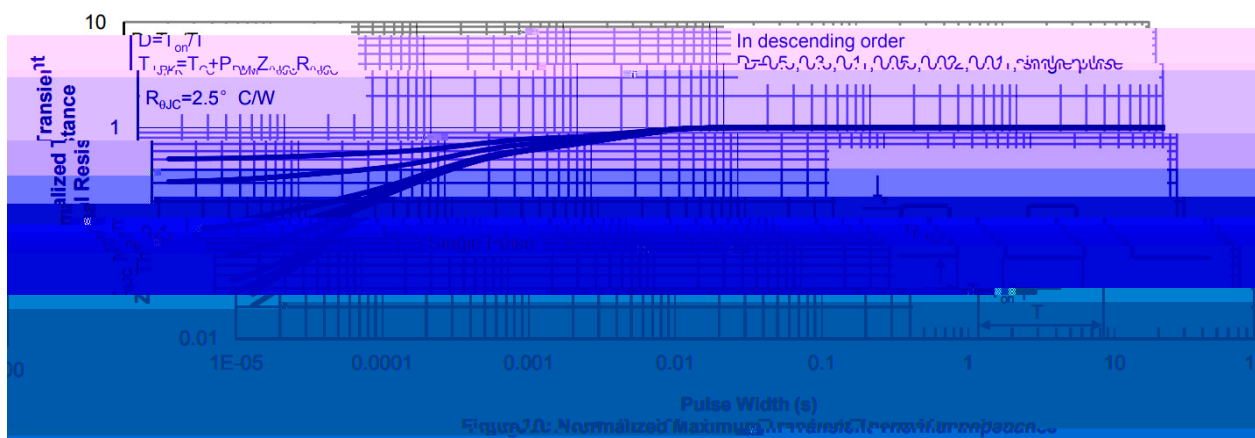
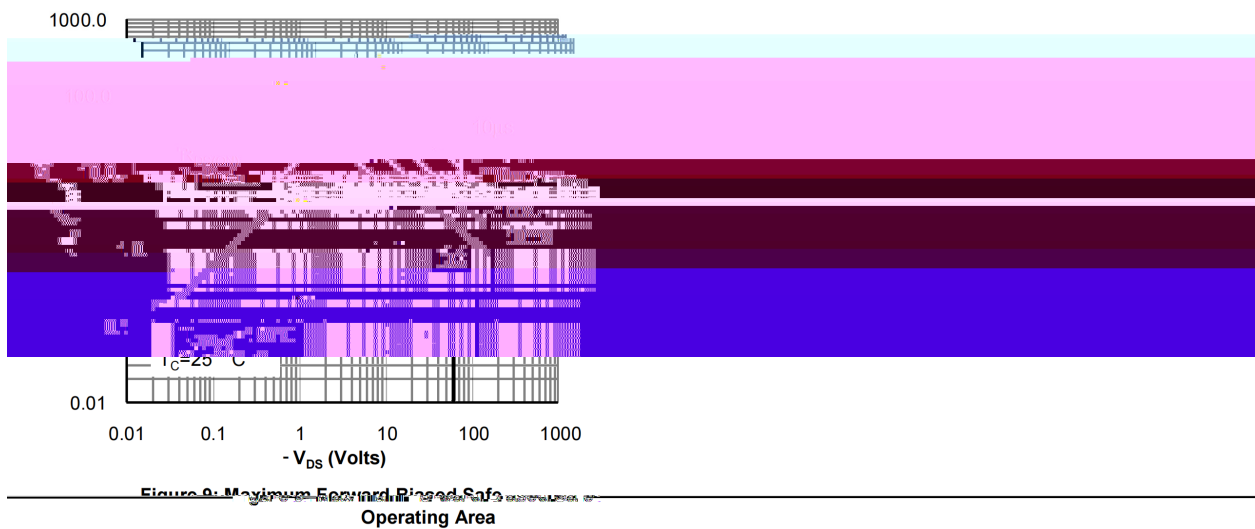
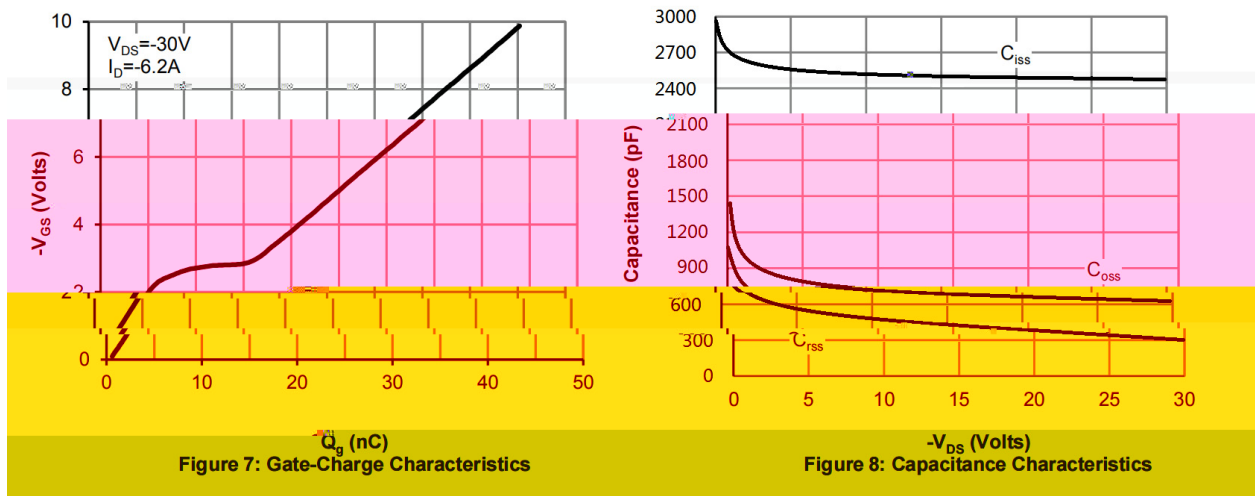


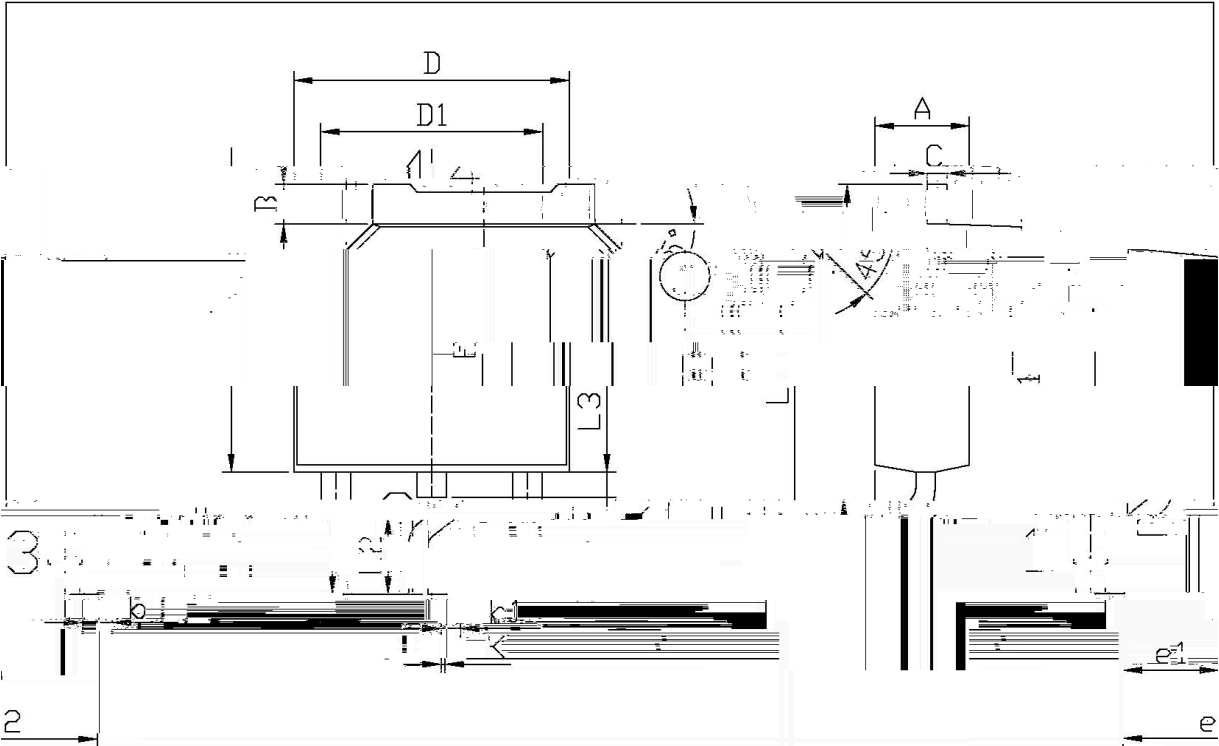
Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

I Electrical Characteristic Curve



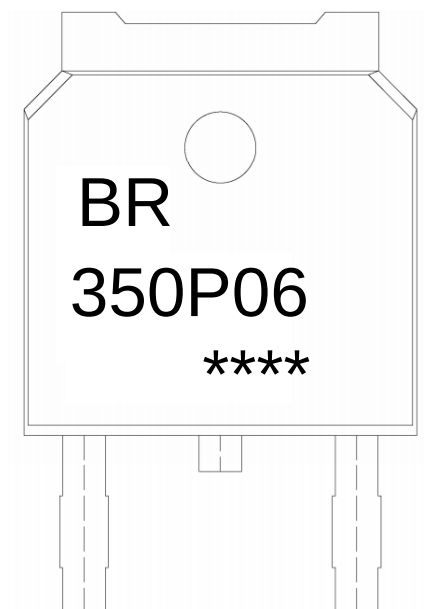
/ Package Dimensions



单位: mm					
Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	6.25	6.75	A	2.20	2.40
B	2.34	2.54	B	0.95	1.25
C	1.27	1.52	C	0.70	0.90
D	10.35	11.10	D	0.55	0.75
D1	9.14	9.52	D1	1.30	1.50
E	6.75	7.12	E	6.45	6.75
F	1.27	1.52	F	0.10	0.15
L3	5.08	5.50	L3	0.10	0.15
L4	0.45	0.55	L4	0.10	0.15
L5	0.45	0.55	L5	0.10	0.15
L6	0.45	0.55	L6	0.10	0.15
L7	0.45	0.55	L7	0.10	0.15
L8	0.45	0.55	L8	0.10	0.15
L9	0.45	0.55	L9	0.10	0.15
L10	0.45	0.55	L10	0.10	0.15
L11	0.45	0.55	L11	0.10	0.15
L12	0.45	0.55	L12	0.10	0.15
L13	0.45	0.55	L13	0.10	0.15
L14	0.45	0.55	L14	0.10	0.15
L15	0.45	0.55	L15	0.10	0.15
L16	0.45	0.55	L16	0.10	0.15
L17	0.45	0.55	L17	0.10	0.15
L18	0.45	0.55	L18	0.10	0.15
L19	0.45	0.55	L19	0.10	0.15
L20	0.45	0.55	L20	0.10	0.15
L21	0.45	0.55	L21	0.10	0.15
L22	0.45	0.55	L22	0.10	0.15
L23	0.45	0.55	L23	0.10	0.15
L24	0.45	0.55	L24	0.10	0.15
L25	0.45	0.55	L25	0.10	0.15
L26	0.45	0.55	L26	0.10	0.15
L27	0.45	0.55	L27	0.10	0.15
L28	0.45	0.55	L28	0.10	0.15
L29	0.45	0.55	L29	0.10	0.15
L30	0.45	0.55	L30	0.10	0.15
L31	0.45	0.55	L31	0.10	0.15
L32	0.45	0.55	L32	0.10	0.15
L33	0.45	0.55	L33	0.10	0.15
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L36	0.45	0.55	L36	0.10	0.15
L37	0.45	0.55	L37	0.10	0.15
L38	0.45	0.55	L38	0.10	0.15
L39	0.45	0.55	L39	0.10	0.15
L40	0.45	0.55	L40	0.10	0.15
L41	0.45	0.55	L41	0.10	0.15
L42	0.45	0.55	L42	0.10	0.15
L43	0.45	0.55	L43	0.10	0.15
L44	0.45	0.55	L44	0.10	0.15
L45	0.45	0.55	L45	0.10	0.15
L46	0.45	0.55	L46	0.10	0.15
L47	0.45	0.55	L47	0.10	0.15
L48	0.45	0.55	L48	0.10	0.15
L49	0.45	0.55	L49	0.10	0.15
L50	0.45	0.55	L50	0.10	0.15
L51	0.45	0.55	L51	0.10	0.15
L52	0.45	0.55	L52	0.10	0.15
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L62	0.45	0.55	L62	0.10	0.15
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L65	0.45	0.55	L65	0.10	0.15
L66	0.45	0.55	L66	0.10	0.15
L67	0.45	0.55	L67	0.10	0.15
L68	0.45	0.55	L68	0.10	0.15
L69	0.45	0.55	L69	0.10	0.15
L70	0.45	0.55	L70	0.10	0.15
L71	0.45	0.55	L71	0.10	0.15
L72	0.45	0.55	L72	0.10	0.15
L73	0.45	0.55	L73	0.10	0.15
L74	0.45	0.55	L74	0.10	0.15
L75	0.45	0.55	L75	0.10	0.15
L76	0.45	0.55	L76	0.10	0.15
L77	0.45	0.55	L77	0.10	0.15
L78	0.45	0.55	L78	0.10	0.15
L79	0.45	0.55	L79	0.10	0.15
L80	0.45	0.55	L80	0.10	0.15
L81	0.45	0.55	L81	0.10	0.15
L82	0.45	0.55	L82	0.10	0.15
L83	0.45	0.55	L83	0.10	0.15
L84	0.45	0.55	L84	0.10	0.15
L85	0.45	0.55	L85	0.10	0.15
L86	0.45	0.55	L86	0.10	0.15
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L89	0.45	0.55	L89	0.10	0.15
L90	0.45	0.55	L90	0.10	0.15
L91	0.45	0.55	L91	0.10	0.15
L92	0.45	0.55	L92	0.10	0.15
L93	0.45	0.55	L93	0.10	0.15
L94	0.45	0.55	L94	0.10	0.15
L95	0.45	0.55	L95	0.10	0.15
L96	0.45	0.55	L96	0.10	0.15
L97	0.45	0.55	L97	0.10	0.15
L98	0.45	0.55	L98	0.10	0.15
L99	0.45	0.55	L99	0.10	0.15
L100	0.45	0.55	L100	0.10	0.15



/ Marking Instructions



BR

350P06

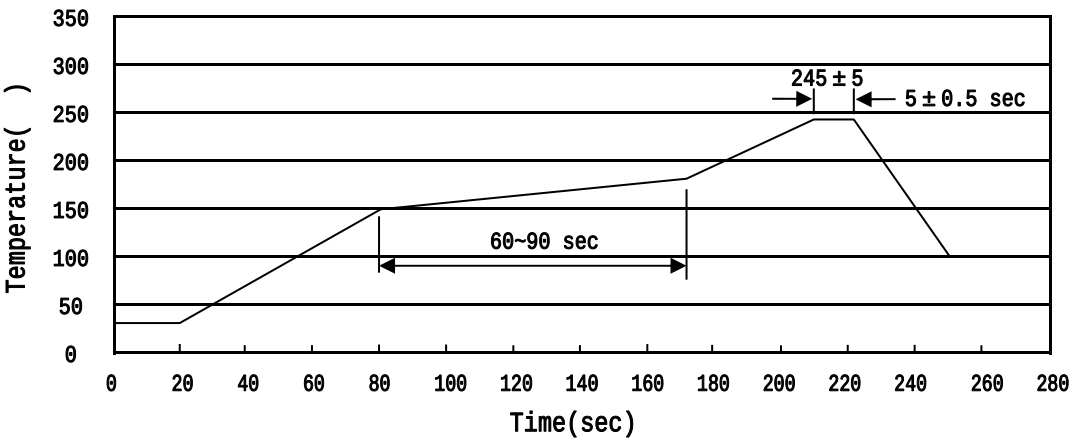
Note:

BR: Company Code

350P06: Product Type Code

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

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



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245±5

5±0.5sec;

2.Peak Temp.:245±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 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	只 卷盘	卷盘 盒	只 盒	盒 箱	只 箱		盒	箱
TO-252	2,500	2	5,000	6	30,000	13 ×16	360×360×50	380×335×366

/ TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	只 套管	套管 盒	只 盒	盒 箱	只 箱	套管	盒	箱
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices