

/ Descriptions

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

/ Features

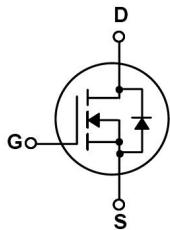
Low gate charge, Low Crss , Fast switching.

/ Applications

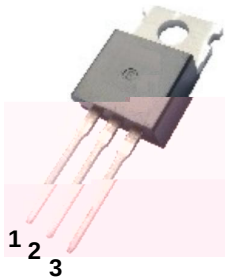
DC/DC

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S

/ h_{FE} Classifications & Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	600	V
Drain Current	$I_D(T_c=25^{\circ}C)$	8	A
Drain Current	$I_D(T_c=100^{\circ}C)$	4.6	A
Drain Current - Pulsed	I_{DM}	30	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	230	mJ
Repetitive Avalanche Energy	E_{AR}	10	mJ
Avalanche Current	I_{AR}	7.5	A
Power Dissipation	$P_D(T_c=25^{\circ}C)$	147	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	

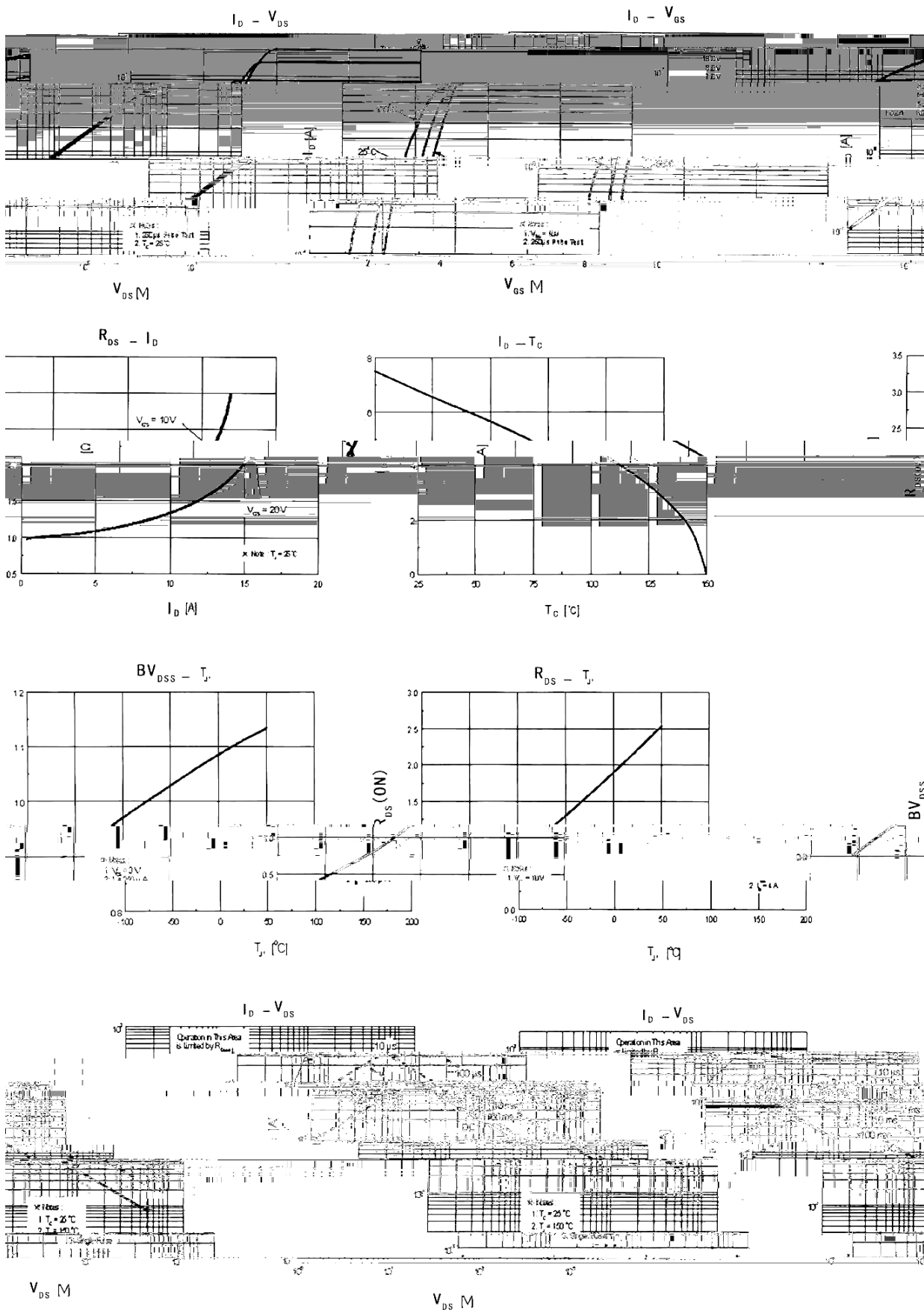
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	600			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=480V$ $T_c=125^{\circ}C$			10	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=3.75A$		1.0	1.2	Ω
Forward Transconductance	g_{FS}	$V_{DS}=40V$ $I_D=3.75A$		8.7		S
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=7.5A$			1.4	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		965	1255	pF
Output Capacitance	C_{oss}			105	135	pF
Reverse Transfer Capacitance	C_{rss}			12	16	pF

Turn-On Delay Time

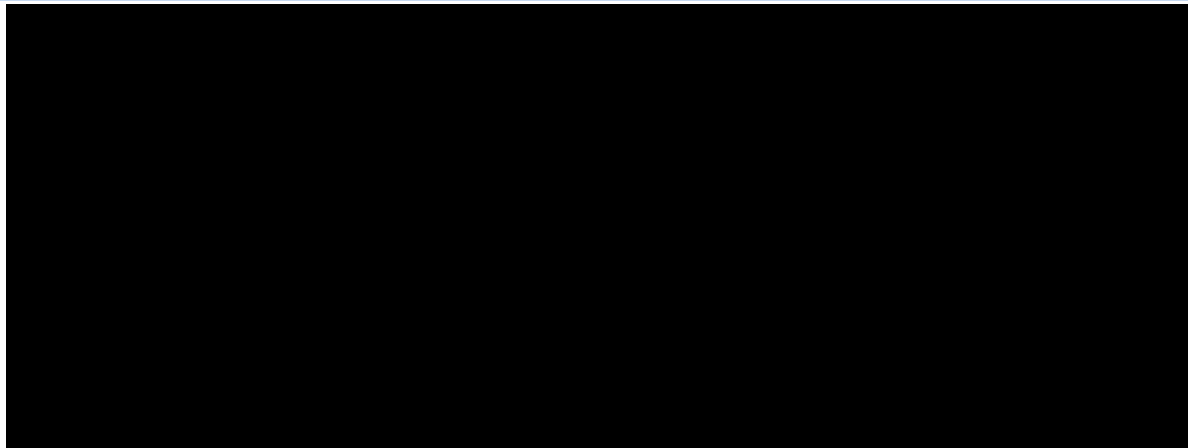
$t_{d(on)}$

$V_{DD}=300V$ $I_D=7.5A$

/ Electrical Characteristic Curve

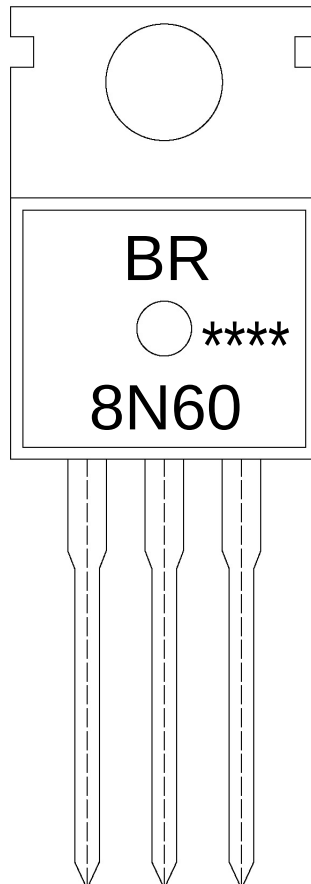


/ Package Dimensions



Dimensions in Millimeters				Dimensions in Millimeters			
Symbol	Min	Max	Typ	Symbol	Min	Max	Typ
A	9.8	10.2		C	1.2	1.4	1
B	2.56	3.00		D	6.3	6.5	6
L	15.7	16.1		B1	9.02	9.18	
b	12.6	13.6		C1	2.2	2.4	
b1	9.6	10.6		C2	0.7	0.8	
b2	0.7	0.8		C3	0.3	0.4	
C	1.2	1.4		C4	0.3	0.4	
C1	2.2	2.4		C5	0.3	0.4	
C2	0.7	0.8		C6	0.3	0.4	
C3	0.3	0.4		C7	0.3	0.4	
C4	0.3	0.4		C8	0.3	0.4	
C5	0.3	0.4		C9	0.3	0.4	
C6	0.3	0.4		C10	0.3	0.4	
C7	0.3	0.4		C11	0.3	0.4	
C8	0.3	0.4		C12	0.3	0.4	
C9	0.3	0.4		C13	0.3	0.4	
C10	0.3	0.4		C14	0.3	0.4	
C11	0.3	0.4		C15	0.3	0.4	
C12	0.3	0.4		C16	0.3	0.4	
C13	0.3	0.4		C17	0.3	0.4	
C14	0.3	0.4		C18	0.3	0.4	
C15	0.3	0.4		C19	0.3	0.4	
C16	0.3	0.4		C20	0.3	0.4	
C17	0.3	0.4		C21	0.3	0.4	
C18	0.3	0.4		C22	0.3	0.4	
C19	0.3	0.4		C23	0.3	0.4	
C20	0.3	0.4		C24	0.3	0.4	
C21	0.3	0.4		C25	0.3	0.4	
C22	0.3	0.4		C26	0.3	0.4	
C23	0.3	0.4		C27	0.3	0.4	
C24	0.3	0.4		C28	0.3	0.4	
C25	0.3	0.4		C29	0.3	0.4	
C26	0.3	0.4		C30	0.3	0.4	
C27	0.3	0.4		C31	0.3	0.4	
C28	0.3	0.4		C32	0.3	0.4	
C29	0.3	0.4		C33	0.3	0.4	
C30	0.3	0.4		C34	0.3	0.4	
C31	0.3	0.4		C35	0.3	0.4	
C32	0.3	0.4		C36	0.3	0.4	
C33	0.3	0.4		C37	0.3	0.4	
C34	0.3	0.4		C38	0.3	0.4	
C35	0.3	0.4		C39	0.3	0.4	
C36	0.3	0.4		C40	0.3	0.4	
C37	0.3	0.4		C41	0.3	0.4	
C38	0.3	0.4		C42	0.3	0.4	
C39	0.3	0.4		C43	0.3	0.4	
C40	0.3	0.4		C44	0.3	0.4	
C41	0.3	0.4		C45	0.3	0.4	
C42	0.3	0.4		C46	0.3	0.4	
C43	0.3	0.4		C47	0.3	0.4	
C44	0.3	0.4		C48	0.3	0.4	
C45	0.3	0.4		C49	0.3	0.4	
C46	0.3	0.4		C50	0.3	0.4	
C47	0.3	0.4		C51	0.3	0.4	
C48	0.3	0.4		C52	0.3	0.4	
C49	0.3	0.4		C53	0.3	0.4	
C50	0.3	0.4		C54	0.3	0.4	
C51	0.3	0.4		C55	0.3	0.4	
C52	0.3	0.4		C56	0.3	0.4	
C53	0.3	0.4		C57	0.3	0.4	
C54	0.3	0.4		C58	0.3	0.4	
C55	0.3	0.4		C59	0.3	0.4	
C56	0.3	0.4		C60	0.3	0.4	
C57	0.3	0.4		C61	0.3	0.4	
C58	0.3	0.4		C62	0.3	0.4	
C59	0.3	0.4		C63	0.3	0.4	
C60	0.3	0.4		C64	0.3	0.4	
C61	0.3	0.4		C65	0.3	0.4	
C62	0.3	0.4		C66	0.3	0.4	
C63	0.3	0.4		C67	0.3	0.4	
C64	0.3	0.4		C68	0.3	0.4	
C65	0.3	0.4		C69	0.3	0.4	
C66	0.3	0.4		C70	0.3	0.4	
C67	0.3	0.4		C71	0.3	0.4	
C68	0.3	0.4		C72	0.3	0.4	
C69	0.3	0.4		C73	0.3	0.4	
C70	0.3	0.4		C74	0.3	0.4	
C71	0.3	0.4		C75	0.3	0.4	
C72	0.3	0.4		C76	0.3	0.4	
C73	0.3	0.4		C77	0.3	0.4	
C74	0.3	0.4		C78	0.3	0.4	
C75	0.3	0.4		C79	0.3	0.4	
C76	0.3	0.4		C80	0.3	0.4	
C77	0.3	0.4		C81	0.3	0.4	
C78	0.3	0.4		C82	0.3	0.4	
C79	0.3	0.4		C83	0.3	0.4	
C80	0.3	0.4		C84	0.3	0.4	
C81	0.3	0.4		C85	0.3	0.4	
C82	0.3	0.4		C86	0.3	0.4	
C83	0.3	0.4		C87	0.3	0.4	
C84	0.3	0.4		C88	0.3	0.4	
C85	0.3	0.4		C89	0.3	0.4	
C86	0.3	0.4		C90	0.3	0.4	
C87	0.3	0.4		C91	0.3	0.4	
C88	0.3	0.4		C92	0.3	0.4	
C89	0.3	0.4		C93	0.3	0.4	
C90	0.3	0.4		C94	0.3	0.4	
C91	0.3	0.4		C95	0.3	0.4	
C92	0.3	0.4		C96	0.3	0.4	
C93	0.3	0.4		C97	0.3	0.4	
C94	0.3	0.4		C98	0.3	0.4	
C95	0.3	0.4		C99	0.3	0.4	
C96	0.3	0.4		C100	0.3	0.4	
C97	0.3	0.4		C101	0.3	0.4	
C98	0.3	0.4		C102	0.3	0.4	
C99	0.3	0.4		C103	0.3	0.4	
C100	0.3	0.4		C104	0.3	0.4	
C101	0.3	0.4		C105	0.3	0.4	
C102	0.3	0.4		C106	0.3	0.4	
C103	0.3	0.4		C107	0.3	0.4	
C104	0.3	0.4		C108	0.3	0.4	
C105	0.3	0.4		C109	0.3	0.4	
C106	0.3	0.4		C110	0.3	0.4	
C107	0.3	0.4		C111	0.3	0.4	
C108	0.3	0.4		C112	0.3	0.4	
C109	0.3	0.4		C113	0.3	0.4	
C110	0.3	0.4		C114	0.3	0.4	
C111	0.3	0.4		C115	0.3	0.4	
C112	0.3	0.4		C116	0.3	0.4	
C113	0.3	0.4		C117	0.3	0.4	
C114	0.3	0.4		C118	0.3	0.4	
C115	0.3	0.4		C119	0.3	0.4	
C116	0.3	0.4		C120	0.3	0.4	
C117	0.3	0.4		C121	0.3	0.4	
C118	0.3	0.4		C122	0.3	0.4	
C119	0.3	0.4		C123	0.3	0.4	
C120	0.3	0.4		C124	0.3	0.4	
C121	0.3	0.4		C125	0.3	0.4	
C122	0.3	0.4		C126	0.3	0.4	
C123	0.3	0.4		C127	0.3	0.4	
C124	0.3	0.4		C128	0.3	0.4	
C125	0.3	0.4		C129	0.3	0.4	
C126	0.3	0.4		C130	0.3	0.4	
C127	0.3	0.4		C131	0.3	0.4	
C128	0.3	0.4		C132	0.3	0.4	
C129	0.3	0.4		C133	0.3	0.4	
C130	0.3	0.4		C134	0.3	0.4	
C131	0.3	0.4		C135	0.3	0.4	
C132	0.3	0.4		C136	0.3	0.4	
C133	0.3	0.4		C137	0.3	0.4	
C134	0.3	0.4		C138	0.3	0.4	
C135	0.3	0.4		C139	0.3	0.4	
C136	0.3	0.4		C140	0.3	0.4	
C137	0.3	0.4		C141	0.3	0.4	
C138	0.3	0.4		C142	0.3	0.4	
C139	0.3	0.4		C143	0.3	0.4	
C140	0.3	0.4		C144	0.3	0.4	
C141	0.3	0.4		C145	0.3	0.4	
C142	0.3	0.4		C146	0.3	0.4	
C143	0.3	0.4		C147	0.3	0.4	
C144	0.3	0.4		C148	0.3	0.4	
C145	0.3	0.4		C149	0.3	0.4	
C146	0.3	0.4		C150	0.3	0.4	
C147	0.3	0.4		C151	0.3	0.4	
C148	0.3	0.4		C152	0.3	0.4	
C149	0.3	0.4		C153	0.3	0.4	
C150	0.3	0.4		C154	0.3	0.4	
C151	0.3	0.4		C155	0.3	0.4	
C152	0.3	0.4		C156	0.3	0.4	
C153	0.3	0.4		C157	0.3	0.4	
C154	0.3	0.4		C158	0.3	0.4	
C155	0.3	0.4		C159	0.3	0.4	
C156	0.3	0.4		C160	0.3	0.4	
C157	0.3	0.4		C161	0.3	0.4	
C158	0.3	0.4		C162	0.3	0.4	
C159	0.3	0.4		C163	0.3	0.4	
C160	0.3	0.4		C164	0.3	0.4	
C161	0.3	0.4		C165	0.3	0.4	
C162	0.3	0.4		C166	0.3	0.4	
C163	0.3	0.4		C167	0.3	0.4	
C164	0.3	0.4		C168	0.3	0.4	
C165	0.3	0.4		C169	0.3	0.4	
C166	0.3	0.4		C170	0.3	0.4	
C167	0.3	0.4		C171	0.3	0.4	
C168	0.3	0.4		C172	0.3	0.4	
C169	0.3	0.4		C173	0.3	0.4	
C170	0.3	0.4		C174	0.3	0.4	
C171	0.3	0.4		C175	0.3	0.4	
C172	0.3	0.4		C176	0.3	0.4	
C173	0.3	0.4		C177	0.3	0.4	
C174	0.3	0.4		C178	0.3	0.4	
C175	0.3	0.4		C179	0.3	0.4	
C176	0.3	0.4		C180	0.3	0.4	
C177	0.3	0.4		C181	0.3	0.4	
C178	0.3	0.4		C182	0.3	0.4	
C179	0.3	0.4		C183	0.3	0.4	
C180	0.3	0.4		C184	0.3	0.4	
C181	0.3	0.4		C185	0.3	0.4	
C182	0.3	0.4		C186	0.3	0.4	
C183	0.3	0.4		C187	0.3	0.4	
C184	0.3	0.4		C188	0.3	0.4	
C185	0.3	0.4		C189	0.3	0.4	
C186	0.3	0.4		C190	0.3	0.4	
C187	0.3	0.4		C191	0.3	0.4	
C188	0.3	0.4		C192	0.3	0.4	
C189	0.3	0.4		C193	0.3	0.4	
C190	0.3	0.4		C194	0.3	0.4	
C191	0.3	0.4		C195	0.3	0.4	
C192	0.3	0.4		C196	0.3	0.4	
C193	0.3	0.4		C197	0.3	0.4	
C194	0.3	0.4		C198	0.3	0.4	
C195	0.3	0.4		C199	0.3	0.4	
C196	0.3	0.4		C200	0.3	0.4	
C197	0.3	0.4		C201	0.3	0.4	
C198	0.3	0.4		C202	0.3	0.4	
C199	0.3	0.4		C203	0.3	0.4	
C200	0.3	0.4		C204	0.3	0.4	
C201	0.3	0.4		C205	0.3	0.4	
C202	0.3	0.4		C206	0		

/ Marking Instructions



BR

8N60

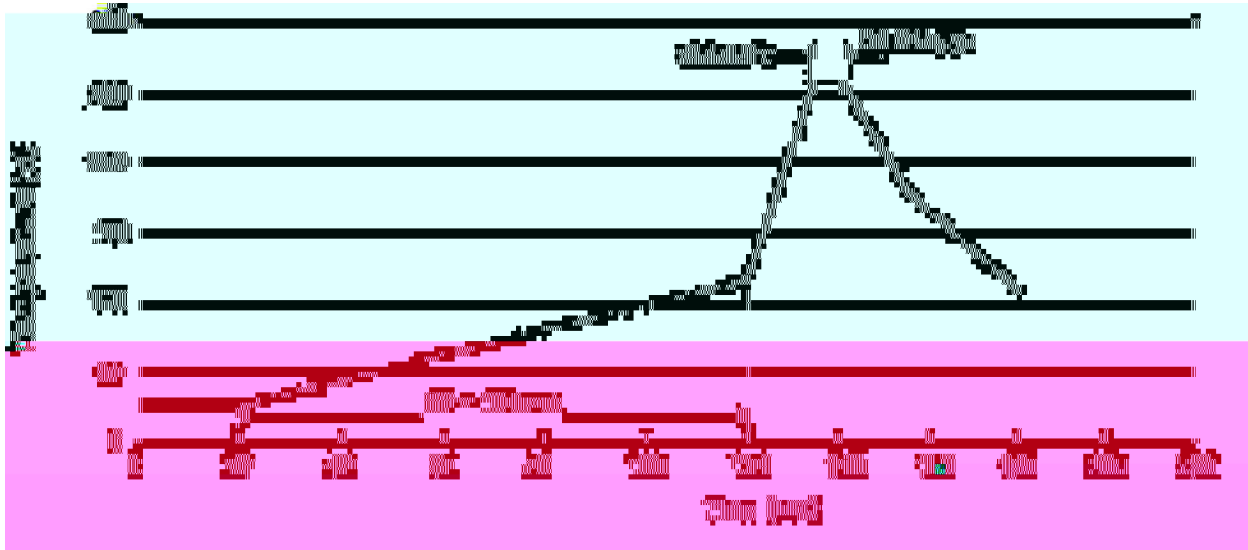
Note:

BR: Company Code

8N60: Product Type.

****: 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 , 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.

/ BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices