

/ Descriptions

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

/ Features

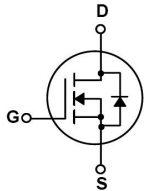
$R_{DS(on)}$ C_{rss}
Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching.

/ Applications

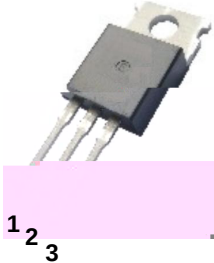
DC/DC

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

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S

/ h_{FE} Classifications & Marking

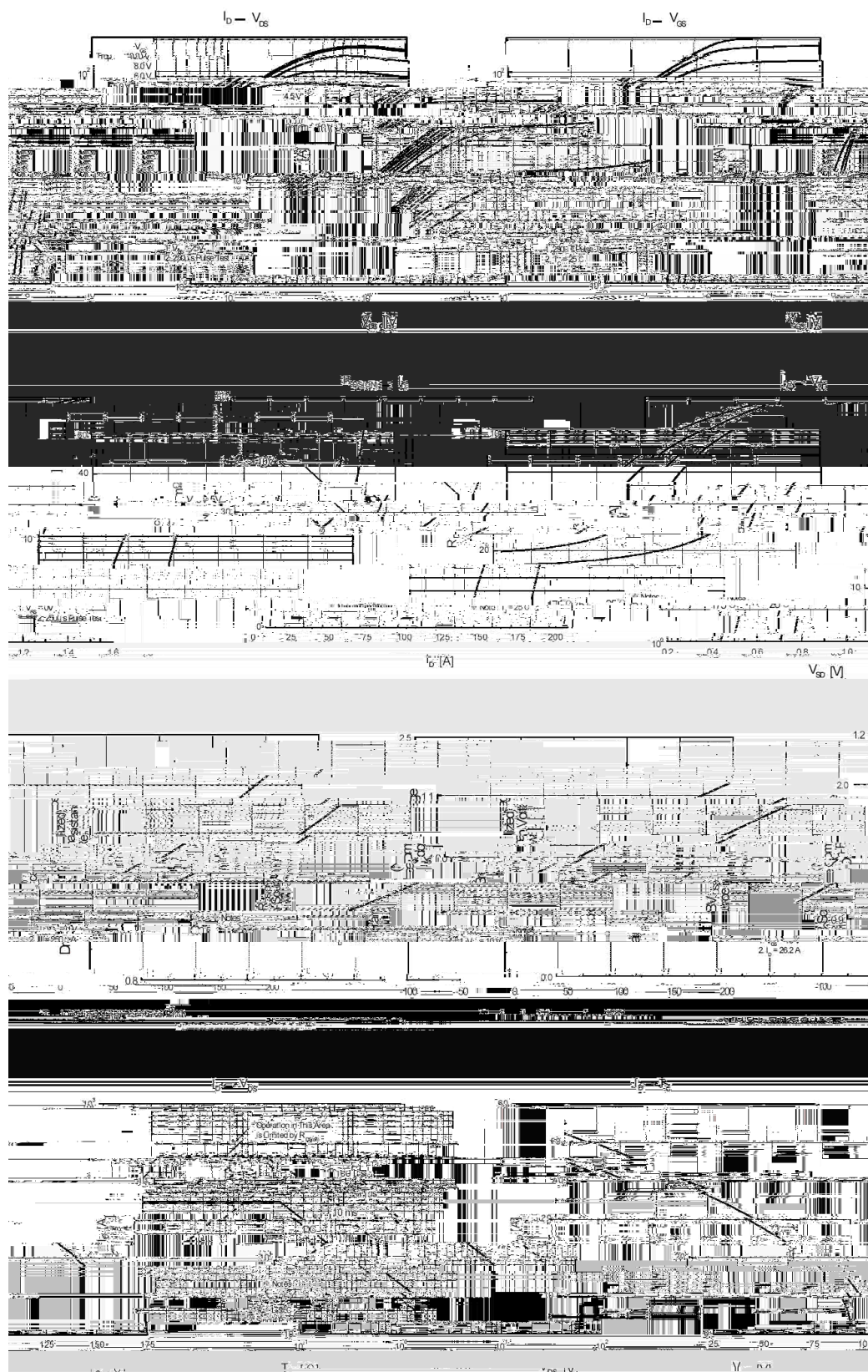
See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	50	A
Drain Current	$I_D(T_c=100^\circ\text{C})$	35.4	A
Drain Current - Pulsed	I_{DM}	200	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy	E_{AS}	490	mJ
Avalanche Current	E_{AR}	12	mJ
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	120	W
Operating Temperature Range	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	

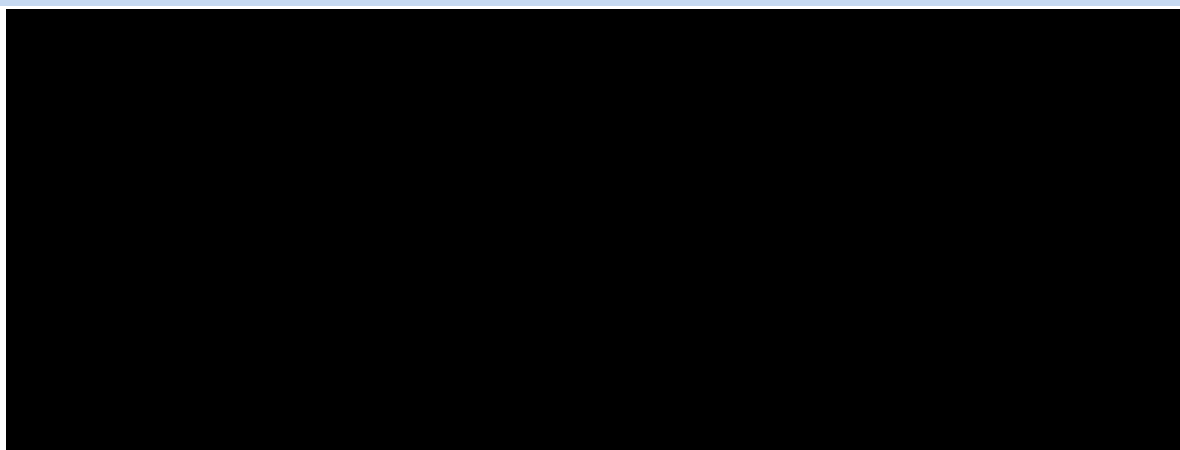
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\text{ A}$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V$ $V_{GS}=0V$			1.0	A
		$V_{DS}=48V$ $T_C=150$			10	
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{ A}$	2		4	V
Total Gate Charge	Q_g	$V_{DS}=48V$ $I_D=50A$ $V_{GS}=10V$		32	42	nC
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=25A$		0.018	0.022	
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=50A$			1.5	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		1050	1365	pF
Output Capacitance	C_{oss}			460	600	

47ev64 48101066.76 206.9606804 22 13()897DS

/ Electrical Characteristic Curve

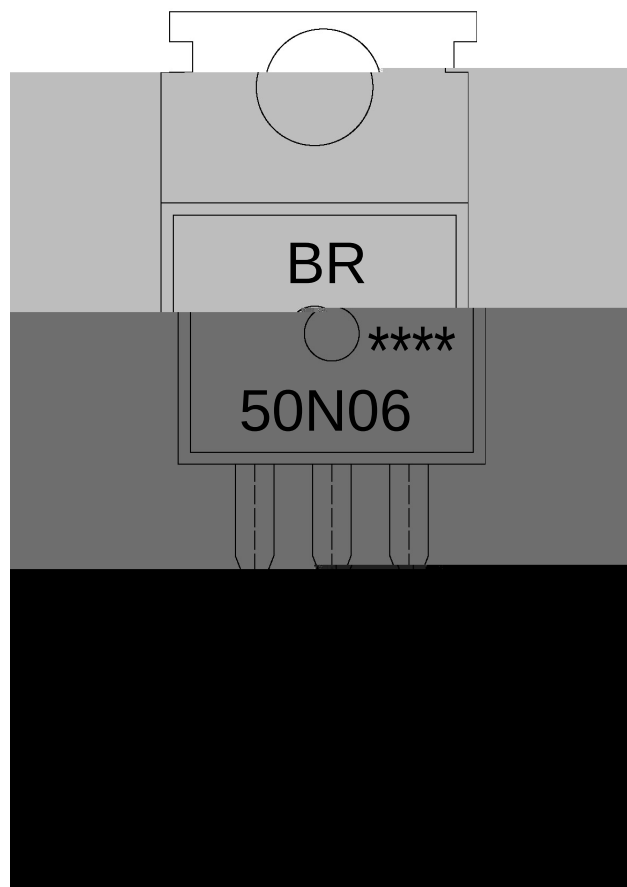


/ Package Dimensions



Dimensions in Millimeters				Dimensions in Millimeters			
Symbol	Max	Min	Typ	Symbol	Max	Min	Typ
A	14.5	14.0	14.5	C	1.2	1.0	1.2
B	9.4	9.0	9.4	D	0.6	0.5	0.6
E	1.25	1.2	1.25	F	0.3	0.2	0.3
G	1.45	1.4	1.45	H	0.7	0.6	0.7
I	1.25	1.2	1.25	J	0.3	0.2	0.3
K	1.45	1.4	1.45	L	0.7	0.6	0.7
M	1.25	1.2	1.25	N	0.3	0.2	0.3
O	1.45	1.4	1.45	P	0.7	0.6	0.7
Q	1.25	1.2	1.25	R	0.3	0.2	0.3
S	1.45	1.4	1.45	T	0.7	0.6	0.7
U	1.25	1.2	1.25	V	0.3	0.2	0.3
W	1.45	1.4	1.45	X	0.7	0.6	0.7
Y	1.25	1.2	1.25	Z	0.3	0.2	0.3
AA	1.45	1.4	1.45	AB	0.7	0.6	0.7
AC	1.25	1.2	1.25	AD	0.3	0.2	0.3
AE	1.45	1.4	1.45	AF	0.7	0.6	0.7
AG	1.25	1.2	1.25	AH	0.3	0.2	0.3
AI	1.45	1.4	1.45	AJ	0.7	0.6	0.7
AK	1.25	1.2	1.25	AL	0.3	0.2	0.3
AM	1.45	1.4	1.45	AN	0.7	0.6	0.7
AO	1.25	1.2	1.25	AP	0.3	0.2	0.3
AW	1.45	1.4	1.45	AX	0.7	0.6	0.7
AY	1.25	1.2	1.25	AZ	0.3	0.2	0.3
BA	1.45	1.4	1.45	BB	0.7	0.6	0.7
BC	1.25	1.2	1.25	BD	0.3	0.2	0.3
BE	1.45	1.4	1.45	BE	0.7	0.6	0.7
BF	1.25	1.2	1.25	BH	0.3	0.2	0.3
BI	1.45	1.4	1.45	BI	0.7	0.6	0.7
BK	1.25	1.2	1.25	BL	0.3	0.2	0.3
BM	1.45	1.4	1.45	BN	0.7	0.6	0.7
BO	1.25	1.2	1.25	BP	0.3	0.2	0.3
BW	1.45	1.4	1.45	BX	0.7	0.6	0.7
BY	1.25	1.2	1.25	BZ	0.3	0.2	0.3
CA	1.45	1.4	1.45	CB	0.7	0.6	0.7
CC	1.25	1.2	1.25	CD	0.3	0.2	0.3
CE	1.45	1.4	1.45	CE	0.7	0.6	0.7
CF	1.25	1.2	1.25	CH	0.3	0.2	0.3
CI	1.45	1.4	1.45	CI	0.7	0.6	0.7
CK	1.25	1.2	1.25	CL	0.3	0.2	0.3
CM	1.45	1.4	1.45	CN	0.7	0.6	0.7
CO	1.25	1.2	1.25	CP	0.3	0.2	0.3
CW	1.45	1.4	1.45	CX	0.7	0.6	0.7
CY	1.25	1.2	1.25	CZ	0.3	0.2	0.3
DA	1.45	1.4	1.45	DB	0.7	0.6	0.7
DC	1.25	1.2	1.25	DD	0.3	0.2	0.3
DE	1.45	1.4	1.45	DE	0.7	0.6	0.7
DF	1.25	1.2	1.25	DH	0.3	0.2	0.3
DI	1.45	1.4	1.45	DI	0.7	0.6	0.7
DK	1.25	1.2	1.25	DL	0.3	0.2	0.3
DM	1.45	1.4	1.45	DN	0.7	0.6	0.7
DO	1.25	1.2	1.25	DP	0.3	0.2	0.3
DW	1.45	1.4	1.45	DX	0.7	0.6	0.7
DY	1.25	1.2	1.25	DZ	0.3	0.2	0.3
EA	1.45	1.4	1.45	EB	0.7	0.6	0.7
EC	1.25	1.2	1.25	ED	0.3	0.2	0.3
EE	1.45	1.4	1.45	EE	0.7	0.6	0.7
EF	1.25	1.2	1.25	EH	0.3	0.2	0.3
EI	1.45	1.4	1.45	EI	0.7	0.6	0.7
EK	1.25	1.2	1.25	EL	0.3	0.2	0.3
EM	1.45	1.4	1.45	EN	0.7	0.6	0.7
EO	1.25	1.2	1.25	EP	0.3	0.2	0.3
EW	1.45	1.4	1.45	EX	0.7	0.6	0.7
EY	1.25	1.2	1.25	EZ	0.3	0.2	0.3
FA	1.45	1.4	1.45	FB	0.7	0.6	0.7
FC	1.25	1.2	1.25	FD	0.3	0.2	0.3
FE	1.45	1.4	1.45	FE	0.7	0.6	0.7
FF	1.25	1.2	1.25	FH	0.3	0.2	0.3
FI	1.45	1.4	1.45	FI	0.7	0.6	0.7
FK	1.25	1.2	1.25	FL	0.3	0.2	0.3
FM	1.45	1.4	1.45	FN	0.7	0.6	0.7
FO	1.25	1.2	1.25	FP	0.3	0.2	0.3
FW	1.45	1.4	1.45	FX	0.7	0.6	0.7
FY	1.25	1.2	1.25	FZ	0.3	0.2	0.3
GA	1.45	1.4	1.45	GB	0.7	0.6	0.7
GC	1.25	1.2	1.25	GD	0.3	0.2	0.3
GE	1.45	1.4	1.45	GE	0.7	0.6	0.7
GF	1.25	1.2	1.25	GH	0.3	0.2	0.3
GI	1.45	1.4	1.45	GI	0.7	0.6	0.7
GK	1.25	1.2	1.25	GL	0.3	0.2	0.3
GM	1.45	1.4	1.45	GN	0.7	0.6	0.7
GO	1.25	1.2	1.25	GP	0.3	0.2	0.3
GW	1.45	1.4	1.45	GX	0.7	0.6	0.7
GY	1.25	1.2	1.25	GZ	0.3	0.2	0.3
HA	1.45	1.4	1.45	HB	0.7	0.6	0.7
HC	1.25	1.2	1.25	HD	0.3	0.2	0.3
HE	1.45	1.4	1.45	HE	0.7	0.6	0.7
HF	1.25	1.2	1.25	HH	0.3	0.2	0.3
HI	1.45	1.4	1.45	HI	0.7	0.6	0.7
HK	1.25	1.2	1.25	HL	0.3	0.2	0.3
HM	1.45	1.4	1.45	HN	0.7	0.6	0.7
HO	1.25	1.2	1.25	HP	0.3	0.2	0.3
HW	1.45	1.4	1.45	HX	0.7	0.6	0.7
HY	1.25	1.2	1.25	HZ	0.3	0.2	0.3
IA	1.45	1.4	1.45	IB	0.7	0.6	0.7
IC	1.25	1.2	1.25	ID	0.3	0.2	0.3
IE	1.45	1.4	1.45	IE	0.7	0.6	0.7
IF	1.25	1.2	1.25	IH	0.3	0.2	0.3
II	1.45	1.4	1.45	II	0.7	0.6	0.7
IK	1.25	1.2	1.25	IL	0.3	0.2	0.3
IM	1.45	1.4	1.45	IN	0.7	0.6	0.7
IO	1.25	1.2	1.25	IP	0.3	0.2	0.3
IW	1.45	1.4	1.45	IX	0.7	0.6	0.7
IY	1.25	1.2	1.25	IZ	0.3	0.2	0.3
JA	1.45	1.4	1.45	JB	0.7	0.6	0.7
JC	1.25	1.2	1.25	JD	0.3	0.2	0.3
JE	1.45	1.4	1.45	JE	0.7	0.6	0.7
JF	1.25	1.2	1.25	JH	0.3	0.2	0.3
JI	1.45	1.4	1.45	JI	0.7	0.6	0.7
JK	1.25	1.2	1.25	JL	0.3	0.2	0.3
JM	1.45	1.4	1.45	JN	0.7	0.6	0.7
JO	1.25	1.2	1.25	JP	0.3	0.2	0.3
JW	1.45	1.4	1.45	JX	0.7	0.6	0.7
JY	1.25	1.2	1.25	JZ	0.3	0.2	0.3
KA	1.45	1.4	1.45	KB	0.7	0.6	0.7
KC	1.25	1.2	1.25	KD	0.3	0.2	0.3
KE	1.45	1.4	1.45	KE	0.7	0.6	0.7
KF	1.25	1.2	1.25	KH	0.3	0.2	0.3
KI	1.45	1.4	1.45	KI	0.7	0.6	0.7
KK	1.25	1.2	1.25	KL	0.3	0.2	0.3
KM	1.45	1.4	1.45	KN	0.7	0.6	0.7
KO	1.25	1.2	1.25	KP	0.3	0.2	0.3
KW	1.45	1.4	1.45	KX	0.7	0.6	0.7
KY	1.25	1.2	1.25	KZ	0.3	0.2	0.3
LA	1.45	1.4	1.45	LB	0.7	0.6	0.7
LC	1.25	1.2	1.25	LD	0.3	0.2	0.3
LE	1.45	1.4	1.45	LE	0.7	0.6	0.7
LF	1.25	1.2	1.25	LH	0.3	0.2	0.3
LI	1.45	1.4	1.45	LI	0.7	0.6	0.7
LK	1.25	1.2	1.25	LL	0.3	0.2	0.3
LM	1.45	1.4	1.45	LN	0.7	0.6	0.7
LO	1.25	1.2	1.25	LP	0.3	0.2	0.3
LW	1.45	1.4	1.45	LX	0.7	0.6	0.7
LY	1.25	1.2	1.25	LZ	0.3	0.2	0.3
MA	1.45	1.4	1.45	MB	0.7	0.6	0.7
MC	1.25	1.2	1.25	MD	0.3	0.2	0.3
ME	1.45	1.4	1.45	ME	0.7	0.6	0.7
MF	1.25	1.2	1.25	MH	0.3	0.2	0.3
MI	1.45	1.4	1.45	MI	0.7	0.6	0.7
MK	1.25	1.2	1.25	ML	0.3	0.2	0.3
MM	1.45	1.4	1.45	MN	0.7	0.6	0.7
MO	1.25	1.2	1.25	MP	0.3	0.2	0.3
MW	1.45	1.4	1.45	MX	0.7	0.6	0.7
MY	1.25	1.2	1.25	MZ	0.3	0.2	0.3
NA	1.45	1.4	1.45	NB	0.7	0.6	0.7
NC	1.25	1.2	1.25	ND	0.3	0.2	0.3
NE	1.45	1.4	1.45	NE	0.7	0.6	0.7
NF	1.25	1.2	1.25	NH	0.3	0.2	0.3
NI	1.45	1.4	1.45	NI	0.7	0.6	0.7
NK	1.25	1.2	1.25	NL	0.3	0.2	0.3
NM	1.45	1.4	1.45	NN	0.7	0.6	0.7
NO	1.25	1.2	1.25	NP	0.3	0.2	0.3
NW	1.45	1.4	1.45	NX	0.7	0.6	0.7
NY	1.25	1.2	1.25	NZ	0.3	0.2	0.3
OA	1.45	1.4	1.45	OB	0.7	0.6	0.7
OC	1.25	1.2	1.25	OD	0.3	0.2	0.3
OE	1.45	1.4	1.45	OE	0.7	0.6	0.7
OF	1.25	1.2	1.25	OH	0.3	0.2	0.3
OI	1.45	1.4	1.45	OI	0.7	0.6	0.7
OK	1.25	1.2	1.25	OL	0.3	0.2	0.3
OM	1.45	1.4	1.45	ON	0.7	0.6	0.7
OO	1.25	1.2	1.25	OP	0.3	0.2	0.3
OW	1.45	1.4	1.45	OX	0.7	0.6	0.7
OY	1.25	1.2	1.25	OZ	0.3	0.2	0.3
PA	1.45	1.4	1.45	PB	0.7	0.6	0.7
PC	1.25	1.2	1.25	PD	0.3	0.2	0.3
PE	1.45	1.4	1.45	PE	0.7	0.6	0.7
PF	1.25	1.2	1.25	PH	0.3	0.2	0.3
PI	1.45	1.4	1.45	PI	0.7	0.6	0.7
PK	1.25	1.2	1.25	PL	0.3	0.2	0.3
PM	1.45	1.4	1.45	PN	0.7	0.6	0.7
PO	1.25	1.2	1.25	PP	0.3	0.2	0.3
PW	1.45	1.4	1.45	PX	0.7	0.6	0.7
PY	1.25	1.2	1.25	PZ	0.3	0.2	0.3
QA	1.45	1.4	1.45	QB	0.7	0.6	0.7
QC	1.25	1.2	1.25	QD	0.3	0.2	0.3
QE	1.45	1.4	1.45	QE	0.7	0.6	0.7
QF	1.25	1.2	1.25	QH	0.3	0.2	0.3
QI	1.45	1.4	1.45	QI	0.7	0.6	0.7
QK	1.25	1.2	1.25	QL	0.3	0.2	0.3
QM	1.45	1.4	1.45	QN	0.7	0.6	0.7
QO	1.25	1.2	1.25	QP	0.3	0.2	0.3
QW	1.45	1.4	1.45	QX	0.7	0.6	0.7
QY	1.25	1.2	1.25	QZ</			

/ Marking Instructions



BR

50N06

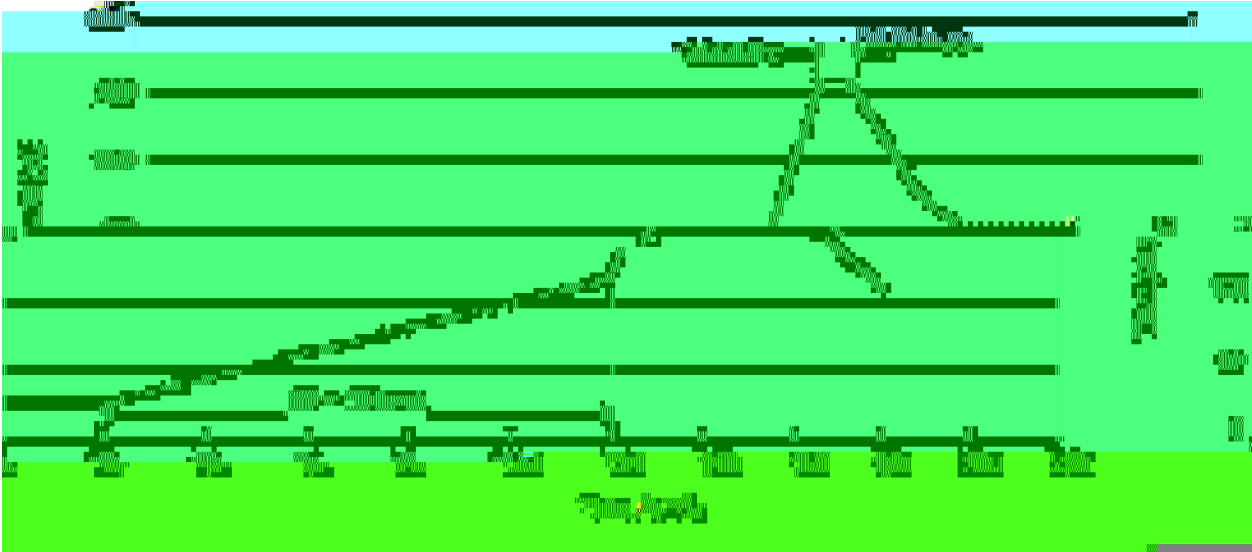
Note:

BR: Company Code

50N06: Product Type Code

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- 1

25 150

60 90sec;
- 2

255±5

5±0.5sec;
- 3

2 10

/sec.
- 1.Preheating:25~150

, Time:60~90sec.
- 2.Peak Temp.:255±5

, Duration:5±0.5sec.
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	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
			2,000	5	10,000	135×190	237×172×102	560×245×195