

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

, $R_{DS(on)}$,
Low gate charge,

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	700	V
Drain Current	I_D	2.0	A
Drain Current ($T_C=100^{\circ}C$)		1.45	A
Drain Current - Pulsed	I_{DM}^{a1}	8.0	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}^{a2}	80	mJ
Avalanche Energy ,Repetitive	E_{AR}^{a2}	6.4	mJ
Avalanche Current	I_{AR}^{a1}	1.1	A
Peak Diode Recovery dv/dt	dv/dt^{a3}	5	V/ns
Power Dissipation	P_D	35	W
Operating Temperature Range	T_J	150	
Maximum Temperature for Soldering	T_L	300	
Storage Temperature Range	T_{STG}	-55 to +150	
Thermal Resistance - Junction to Ambient	$R_{\theta JA}$	62.5	/W
Thermal Resistance - Junction to Case	$R_{\theta JC}$	3.57	/W

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	700			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700V$ $V_{GS}=0V$			10	μA
		$V_{DS}=560V$ $V_{GS}=0V$ $T_a=125^{\circ}C$			100	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
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	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=1.0A$		4.7	6.5	Ω
Forward Transconductance	g_{FS}	$V_{DS}=30V$ $I_D=1.0A$		1.5		S
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=2.0A$			1.5	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		280		pF
Output Capacitance	C_{oss}			30		pF
Reverse Transfer Capacitance	C_{rss}			3.8		pF

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=350V$ $I_D=2.0A$ $V_{GS}=10V$ $R_G=25\Omega$		7.8		ns
Turn-On Rise Time	t_r			5.5		ns
Turn-Off Delay Time	$t_{d(off)}$			33		ns
Turn-Off Fall Time	t_f			16		ns
Total Gate Charge	Q_g	$I_D=2.0A$ $V_{DD}=350V$ $V_{GS}=10V$		8.5		nC
Gate to Source Charge	Q_{gs}			1.5		nC
Gate to Drain (“Miller”)Charge	Q_{gd}			4.0		nC
Continuous Source Current (Body Diode)	I_S				2.0	A
Maximum Pulsed Current (Body Diode)	I_{SM}				8.0	A
Reverse Recovery Time	t_{rr}	$I_S=2.0A$ $T_J=25^\circ C$ $di_F/dt=100A/us$ $V_{GS}=0V$		455		ns
Reverse Recovery Charge	Q_{rr}			1370		nC

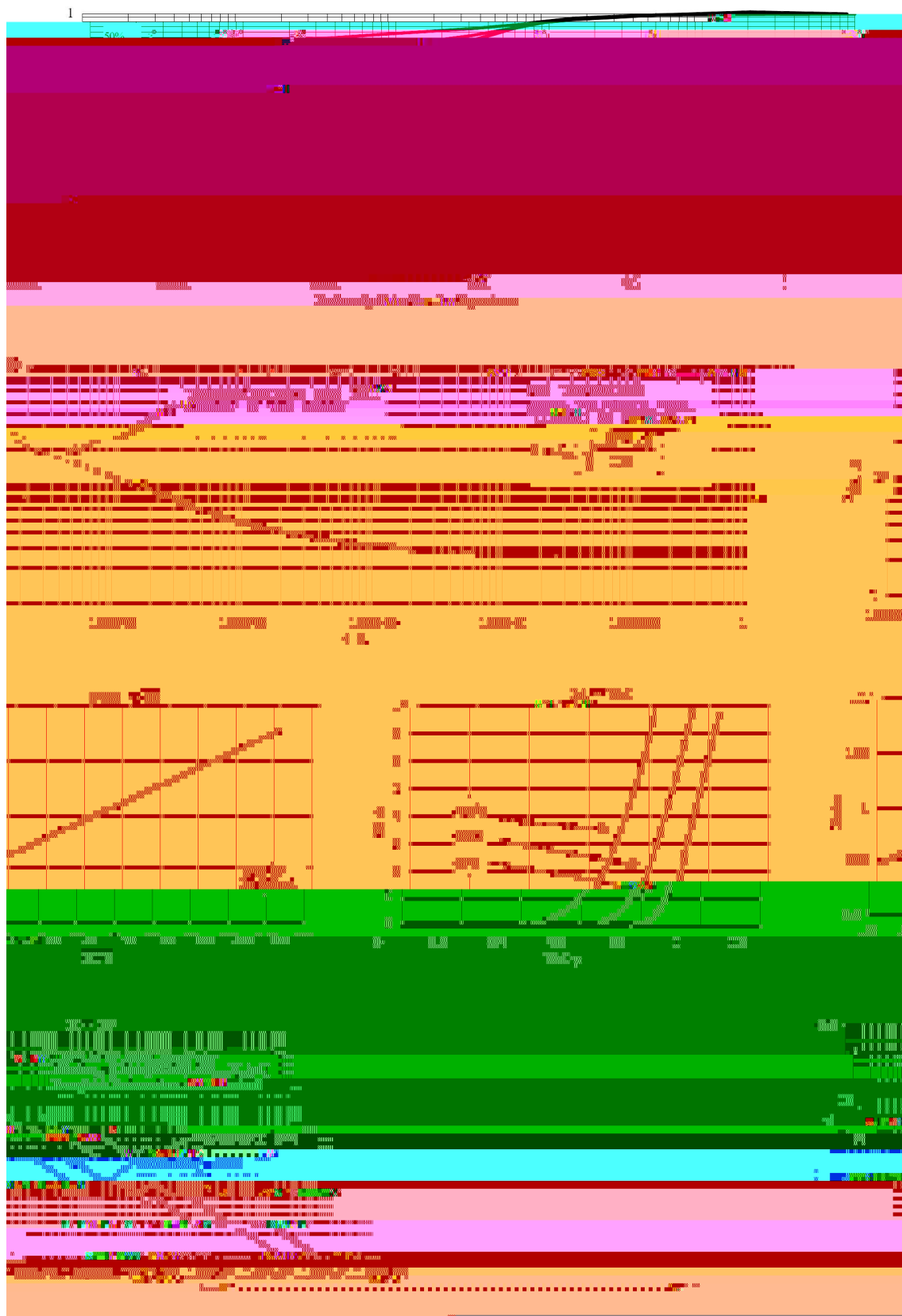
Notes:

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: $L=10.0mH$, $I_D=4A$, Start $T_J=25$

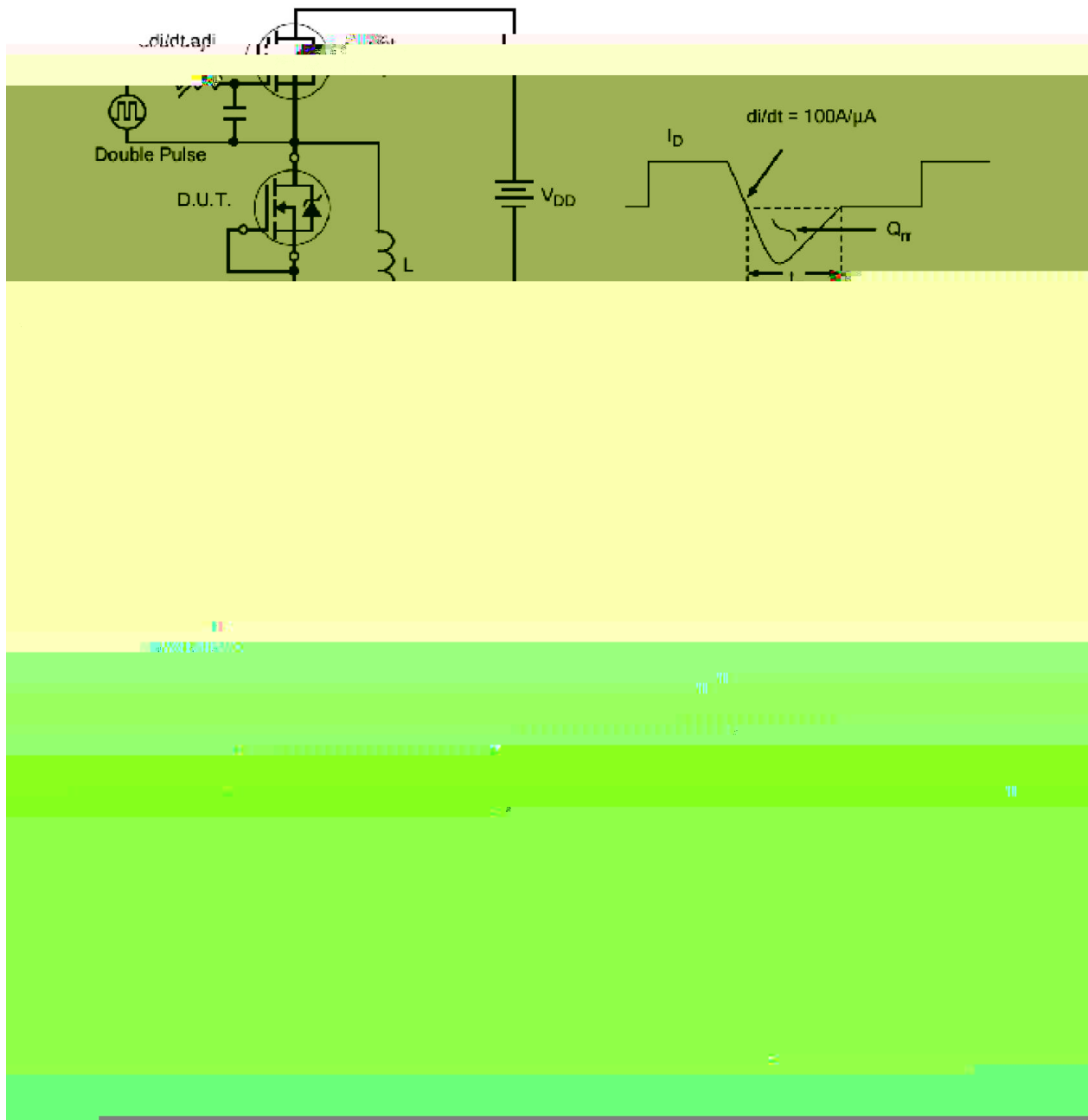
a3: $I_{SD}=2A$, $di/dt \leq 100A/us$, $V_{DD} \leq BV_{DS}$, Start $T_J=25$

/ Electrical Characteristic Curve

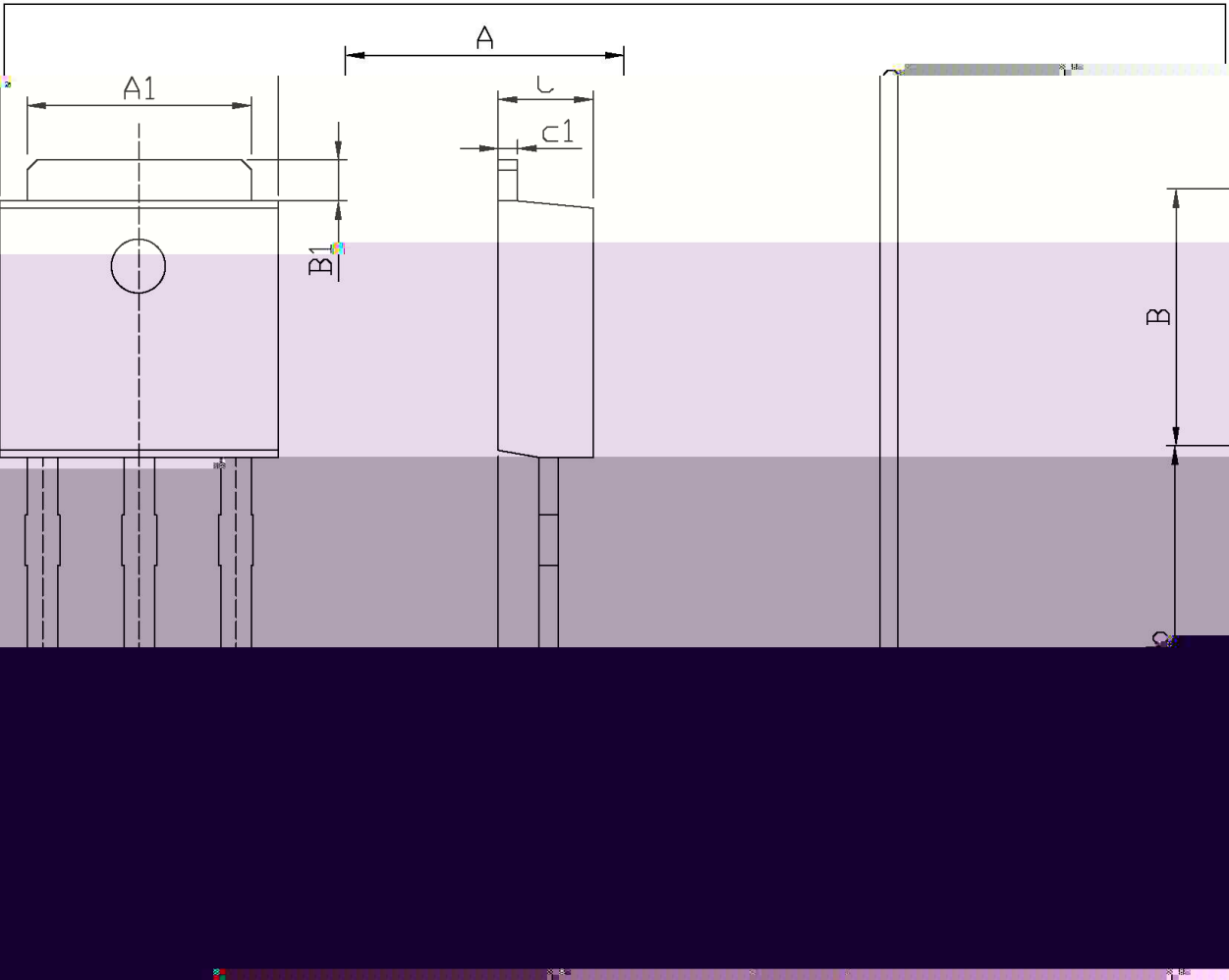


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/ Test Circuit and Waveform Curve

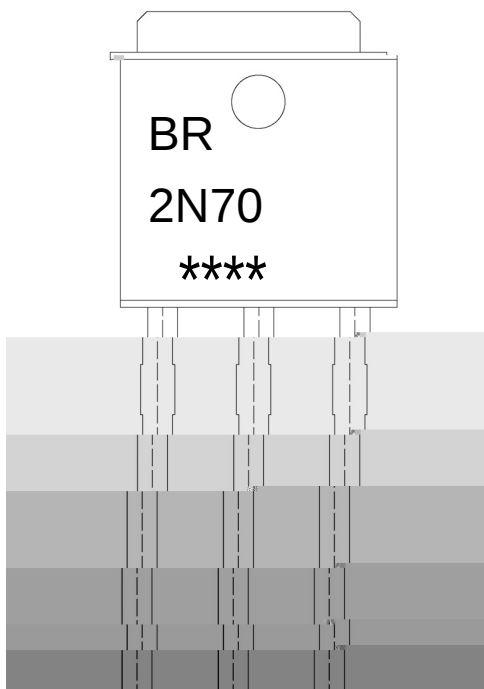


/ Package Dimensions



单位: mm							
Symbol	Dimensions In Millimeters				Symbol	Dimensions In Millimeters	
	Min	Max				Min	Max
a	0.50	0.70			A	6.45	6.75
b	9.00	9.40			A1	5.10	5.50
c	2.24	2.34			C	7.20	7.30
c1	0.43	0.45			C1	0.35	0.40

/ Marking Instructions



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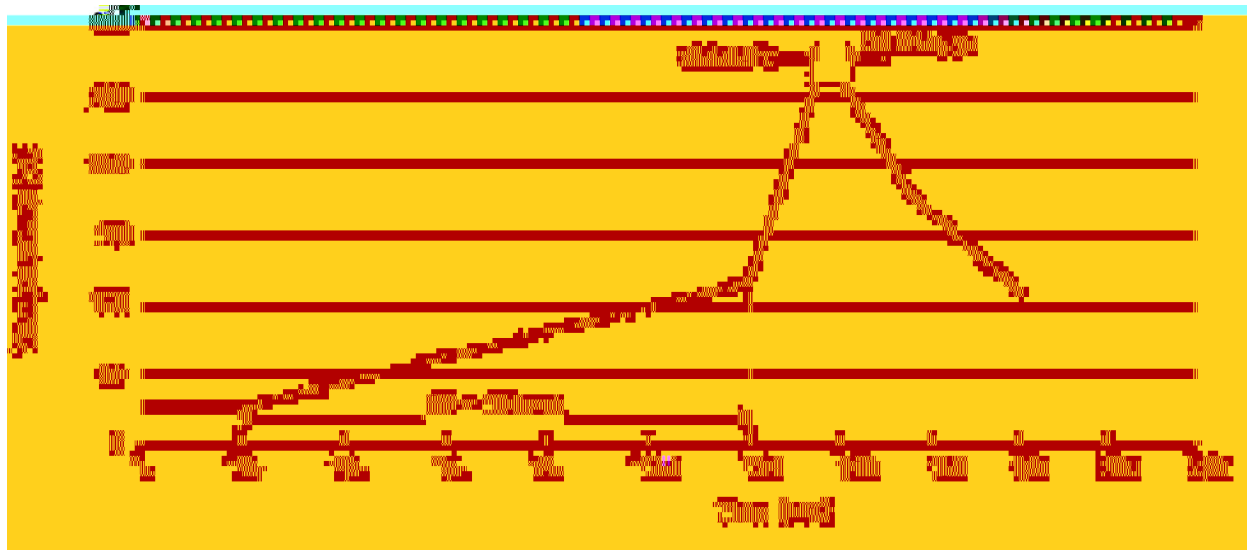
Note:

BR: Company Code

2N70: 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	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
TO-251	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195

/ **TUBE**

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ **Notices**