

/ Descriptions

N TO-252

N-Channel MOSFET in a TO-252 Plastic Package.

/ Features

$V_{DS}=200V$ $I_D=9A$ $V_{GS}=\pm 20V$

$R_{DS(on)}@10V \leq 0.4\Omega$ (Type.0.35 Ω)

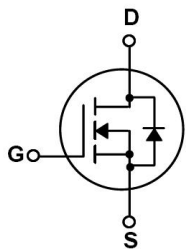
HF Product.

/ Applications

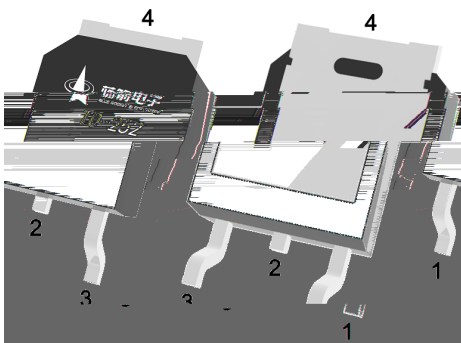
LED

Networking, Load Switch, LED applications.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 4 D PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Drain Current	$I_D(T_c=25)$	9	A
Drain Current - Pulsed	I_{DM}	36	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy(L=10mH)	E_{AS}	166	mJ
Avalanche Current(L=10mH)	I_{AS}	5	A
Power Dissipation	$P_D(T_c=25)$	46	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Maximum Junction-to-Ambient	$R_{\theta JA}$	100.3	/W
Maximum Junction-to-Case	$R_{\theta JC}$	2.7	

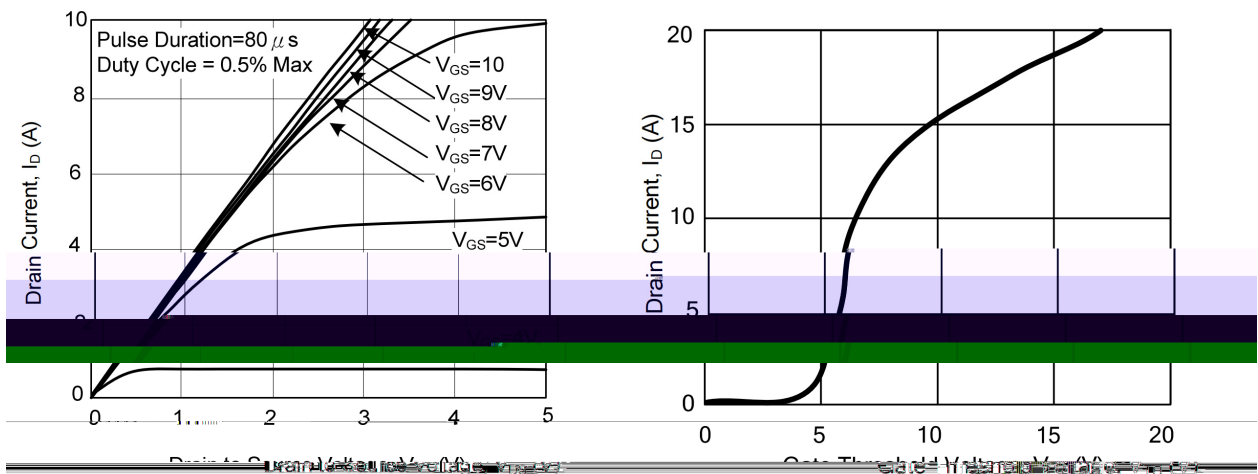
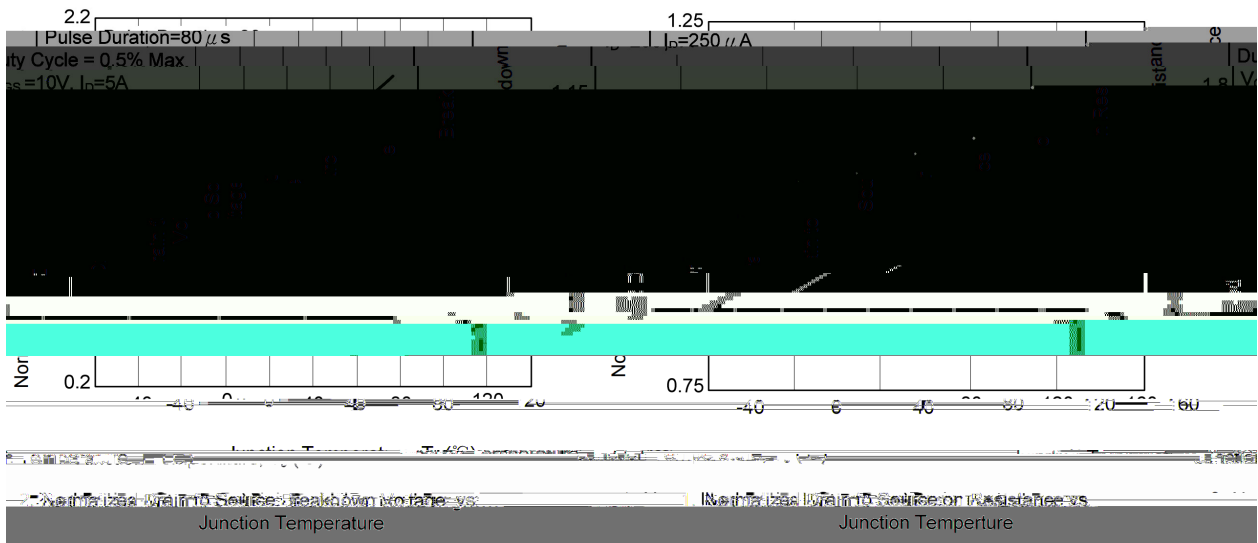
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	200			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2	3	4	V
Total gate charge	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=4.5A$		0.35	0.4	Ω
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$, $f=1MHz$		1.7		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		630		pF
Output Capacitance	C_{oss}			270		
Reverse Transfer Capacitance	C_{rss}			50		
Total Gate Charge	Q_g	$V_{GS}=10V$, $V_{DS}=160V$, $I_G=1.5mA$, $I_D=9A$		21	30	nC
Gate Source Charge	Q_{gs}			11.2	20	
Gate Drain Charge	Q_{gd}			9.5	15	

/ **Electrical Characteristics(Ta=25)**

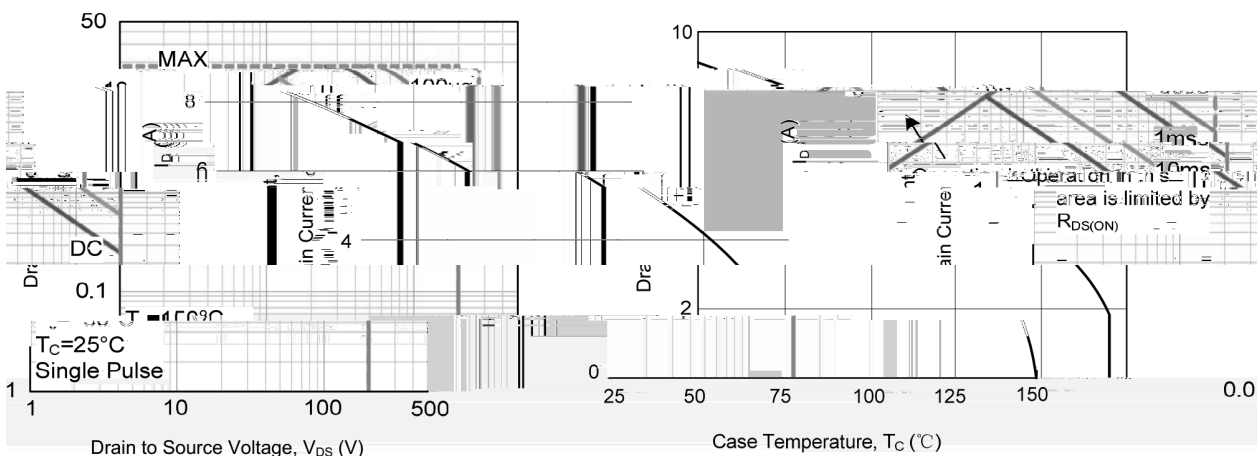
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=90V$ $R_L=9.6$ $R_{GEN}=9.1$		15	32	ns
Turn-On Rise Time	t_r			33	53	
Turn-Off Delay Time	$t_{d(off)}$			40	55	
Turn-Off Fall Time	t_f			30	45	
Maximum Continuous Drain-Source Diode Forward Current	I_S				9	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				36	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0 V$, $I_S = 9.0A$			1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V$, $I_S = 9.0A$, $di_F/dt = 100 A/\mu s$		455		nS
Reverse Recovery Charge	Q_{rr}			3.5		nC

/ Electrical Characteristic Curve



3. Saturation Characteristics

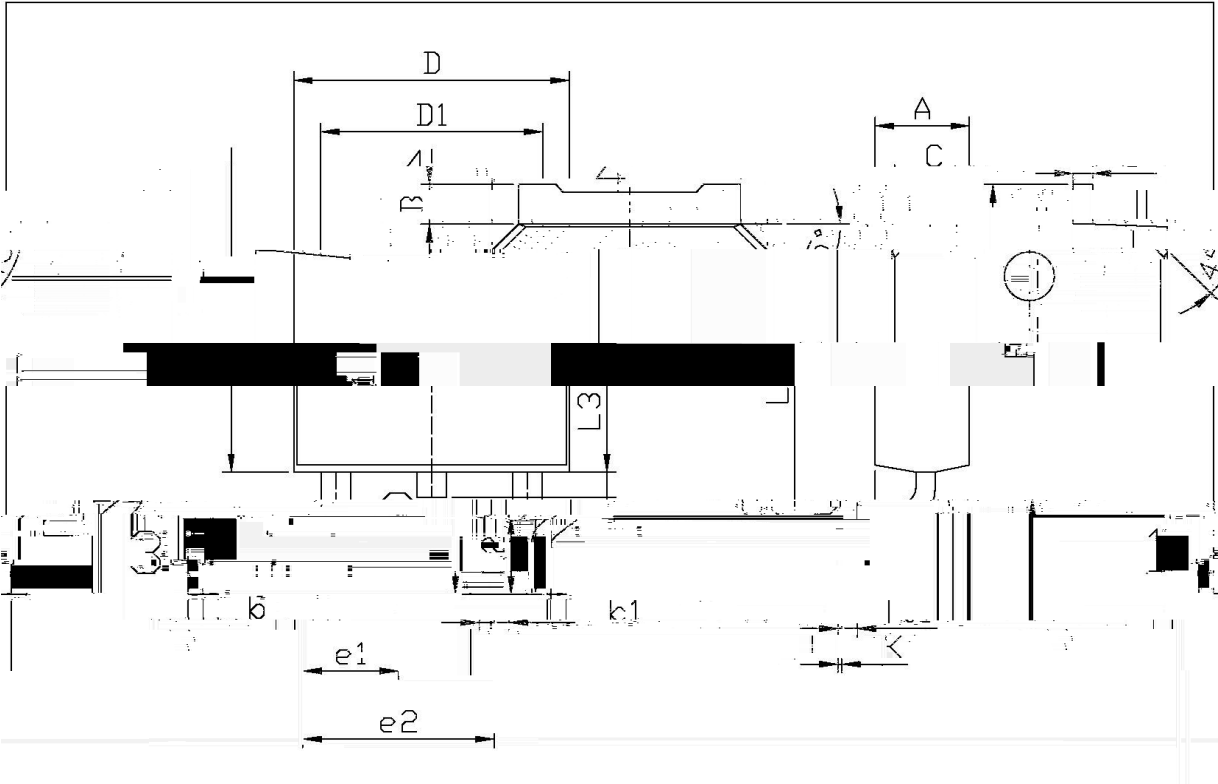
4. Drain Current vs. Gate Threshold Voltage



5. Forward Bias Safe Operating Area

6. Maximum Continuous Drain Current vs. Case Temperature

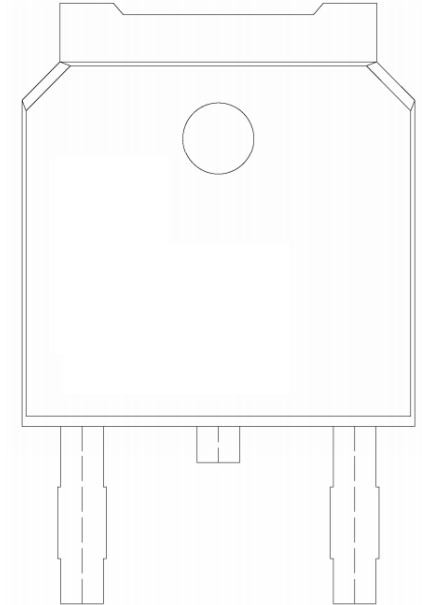
/ Package Dimensions



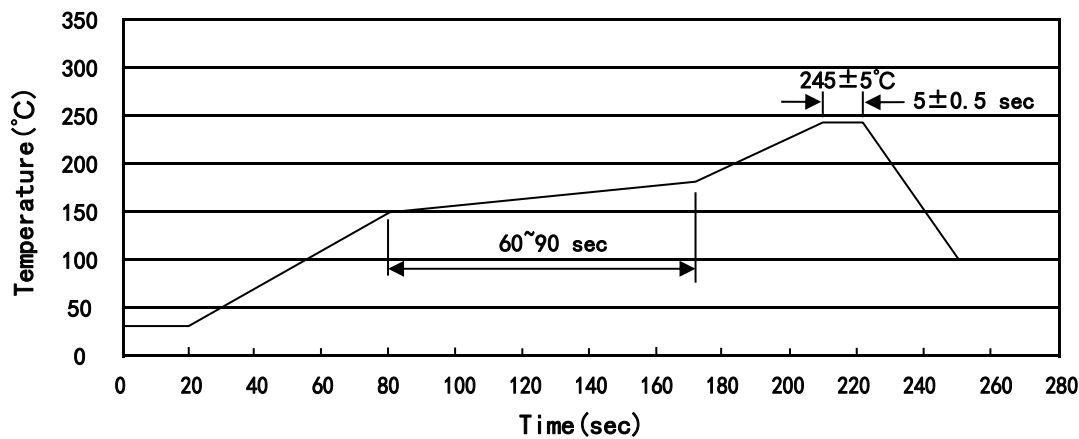
单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
F	5.95	6.25	A	2.20	2.40
b	2.24	2.34	B	0.95	1.25
e1	2.24	2.34	b	0.70	0.90
e2	4.42	4.72	b1	0.45	0.55
L1	9.85	10.35	f	0.45	0.55
l3	0.60	0.90	l3	1.70	2.00
D	6.45	6.7	D	6.45	6.7

T0-252



() / 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	Units					Dimension (unit mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13 ×16	360×360×50	380×335×366

/ 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