

General Features

- $V_{DS} = 30V, I_D = 140A$
- $R_{DS(ON)} < 3.0m\Omega @ V_{GS} = 10V$
- $R_{DS(ON)} < 3.6m\Omega @ V_{GS} = 4.5V$

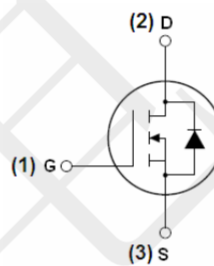
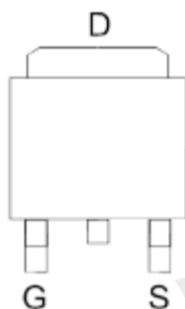
Application

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

Package and Pin Configuration

(TO-252-3L)

Top View



Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	140	A
Drain Current-Continuous ($T_C = 100^\circ C$)	$I_D (100^\circ C)$	99	A
Pulsed Drain Current	I_{DM}	400	A
Maximum Power Dissipation	P_D	130	W
Single pulse avalanche energy ^(Note 5)	E_{AS}	400	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	$^\circ C$

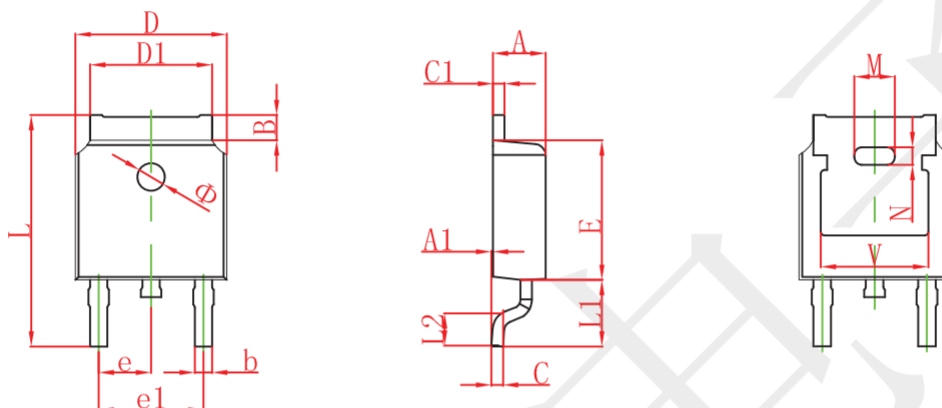
Thermal Characteristic

Thermal Resistance, Junction-to-Case ^(Note 2)	$R_{\theta JC}$	1.25	$^\circ C/W$
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Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	2.5	3.0	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	2.9	3.6	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=20A$	50	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$		3780		PF
Output Capacitance	C_{oss}			448		PF
Reverse Transfer Capacitance	C_{rss}			410		PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=15V$ $R_L=0.75\Omega, R_{GEN}=3\Omega$	-	12	-	nS
Turn-on Rise Time	t_r		-	16	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	42	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=15V, I_D=20A$		80		nC
Gate-Source Charge	Q_{gs}			12.4		nC
Gate-Drain Charge	Q_{gd}			18.3		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=20A$	-	-	1.2	V
Diode Forward Current (Note 2)	I_S	-		-	140	A
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}C, I_F = 20A$ $di/dt = 100A/\mu s$ (Note3)	-	58	-	nS
Reverse Recovery Charge	Q_{rr}		-	115	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

TO252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778 REF.		0.070 REF.	
N	0.762 REF.		0.018 REF.	
L	9.800	10.400	0.386	0.409
L1	2.9 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051