60V/30A N-Channel MOSFET

Features

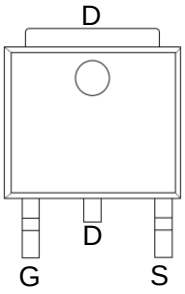
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Product Summary

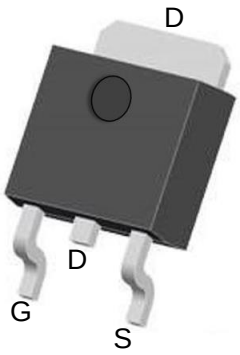
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
60V	30mΩ@10V	30A
	40mΩ@4.5V	

Application

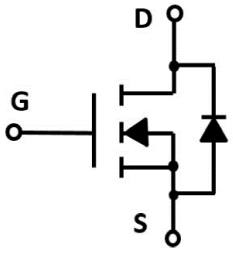
- Power switching application



Marking and pin assignment



TO-252 top view



Schematic diagram

Pb-Free

RoHS

Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		60	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 155	°C
I_S	Diode Continuous Forward Current	Tc=25°C	30	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	100	A
I_D	Continuous Drain Current@GS=10V	Tc=25°C	30	A
P_D	Maximum Power Dissipation	Tc=25°C	41.5	W
E_{AS}	Single pulse avalanche energy[Note1]		48	mJ

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Unit**
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$BV_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V，ID=250μA	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS=60V，VGS=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V，VDS=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS，ID=250μA	1.2	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	VGS=10V， ID=10A	--	22	30	mΩ
		VGS=4.5V，ID=5A	--	30	40	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	VDS=30V，VGS=0V， f=1MHz	--	1050	--	pF
C_{OSS}	Output Capacitance		--	65	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	55	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	VDD=30V，ID=10A，VGS=10V	--	26	--	nC
Q_{gs}	Gate Source Charge		--	5.7	--	nC
Q_{gd}	Gate Drain Charge		--	5.2	--	nC
$t_{d(on)}$	Turn-on Delay Time	VDD=30V，ID=10A，VGS=10V，RG=3Ω	--	8.4	--	nS
t_r	Turn-on Rise Time		--	8.5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	36	--	nS
t_f	Turn-Off Fall Time		--	5	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=10A，	--	0.8	1.2	V

Note1:L=0.5mH, VDD=30V, Start TJ=25℃.

Typical Operating Characteristics

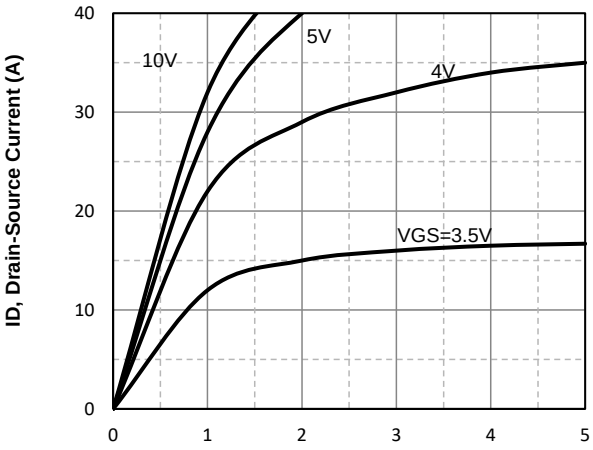


Fig1. Typical Output Characteristics

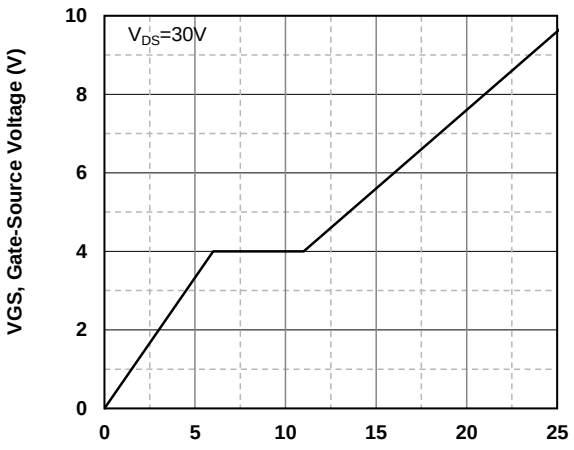


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

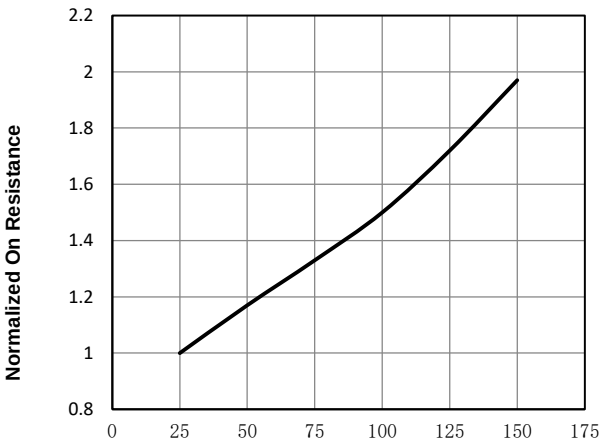


Fig3. Normalized On-Resistance Vs. Temperature

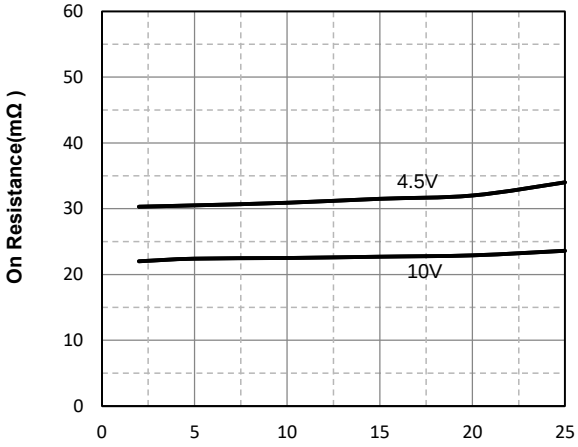


Fig4. On-Resistance Vs. Drain-Source Current

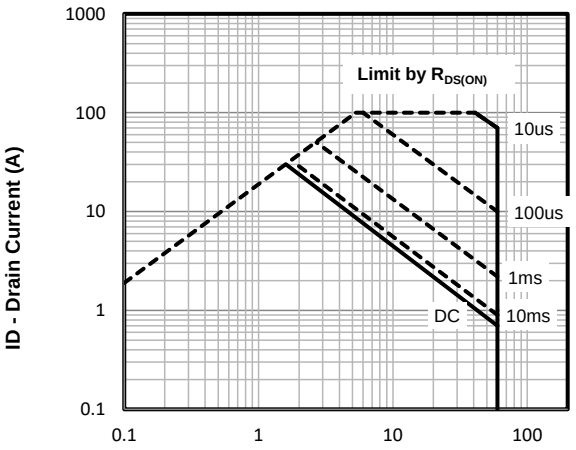


Fig5. Maximum Safe Operating Area

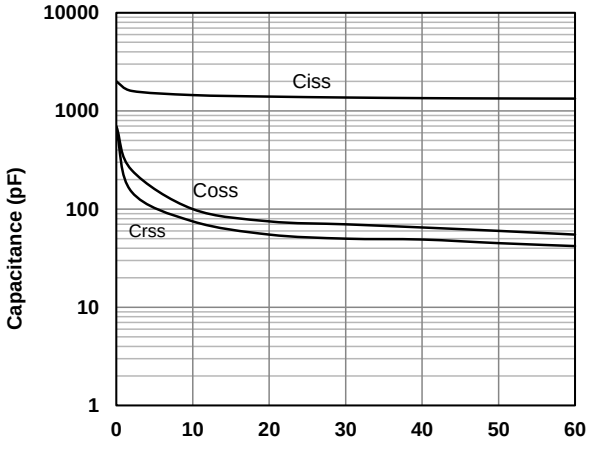
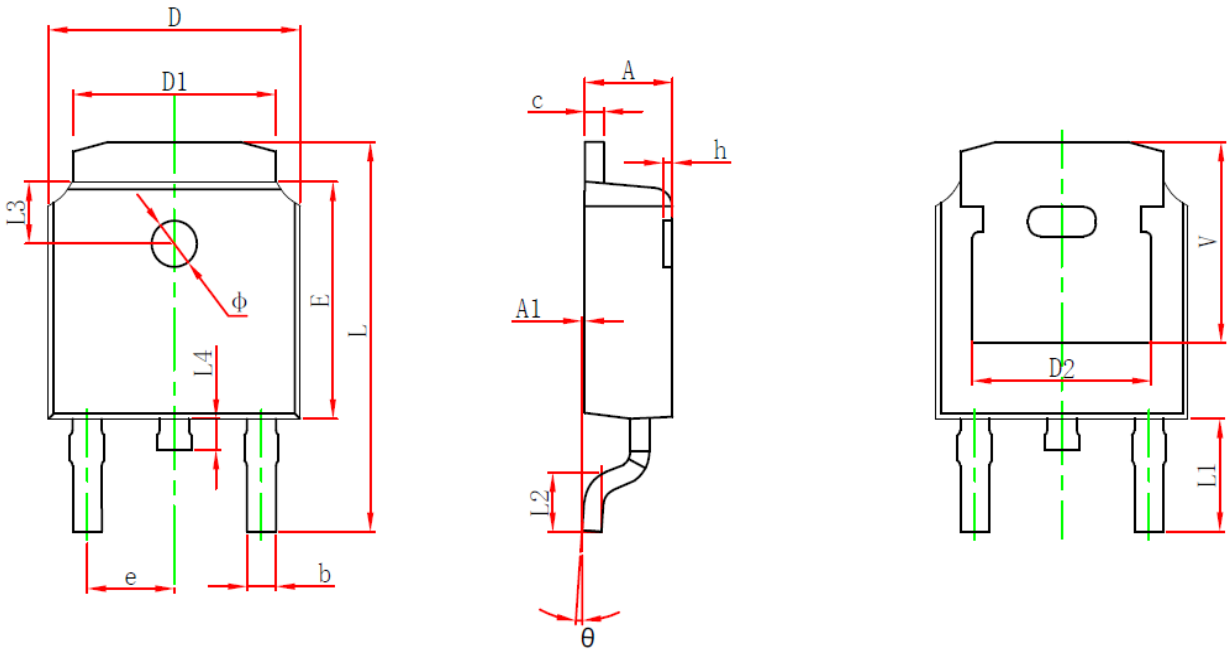


Fig6 Typical Capacitance Vs.Drain-Source

TO-252 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.095
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.450	0.580	0.018	0.023
D	6.500	6.700	0.257	0.265
D1	5.100	5.460	0.202	0.216
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.237	0.245
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.384	0.408
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.040
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

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