

60V/30A N-Channel MOSFET

Features

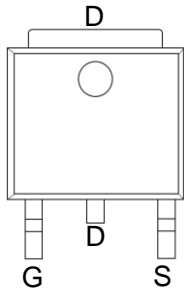
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Product Summary

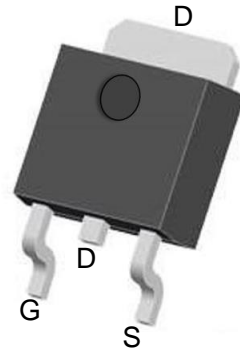
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
60V	30m Ω @10V	30A
	40m Ω @4.5V	

Application

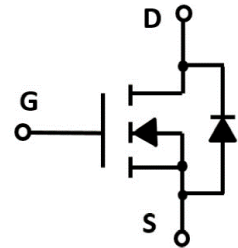
- Power switching application



Marking and pin assignment



TO-252 top view



Schematic diagram



Pb-Free



RoHS



Halogen-Free

Absolute Maximum Ratings (TA=25°C 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	$T_C=25^\circ\text{C}$ 30	A
Mounted on Large Heat Sink			
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 100	A
I_D	Continuous Drain Current@GS=10V	$T_C=25^\circ\text{C}$ 30	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 41.5	W
E_{AS}	Single pulse avalanche energy ^{Note1}	48	mJ

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 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	μA
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 @ T_J = 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	T _J =25°C, I _s =10A,	--	0.8	1.2	V

Note1:L=0.5mH, VDD=30V, Start T_J=25°C.

Typical Operating Characteristics

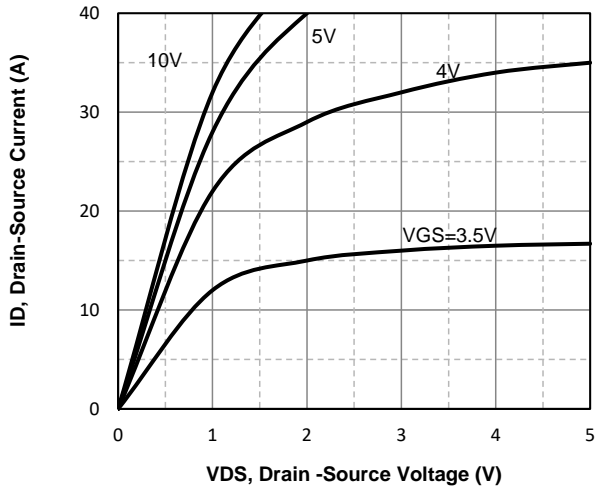


Fig1. Typical Output Characteristics

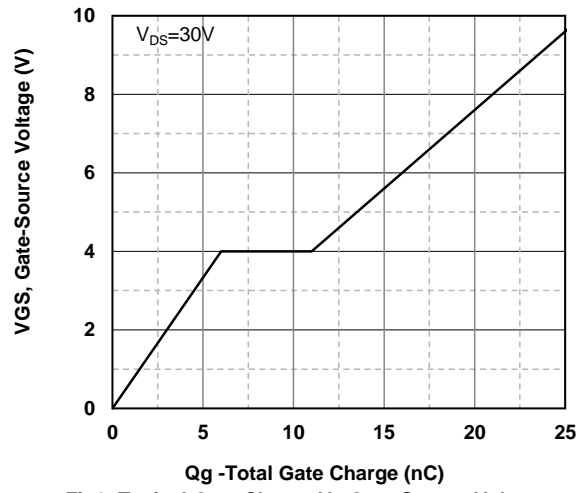


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

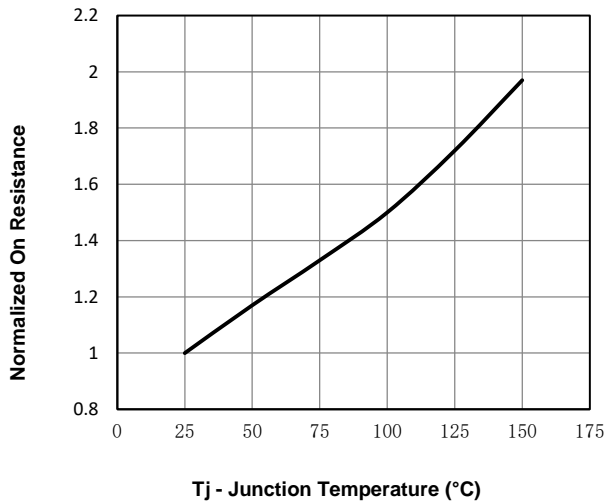


Fig3. Normalized On-Resistance Vs. Temperature

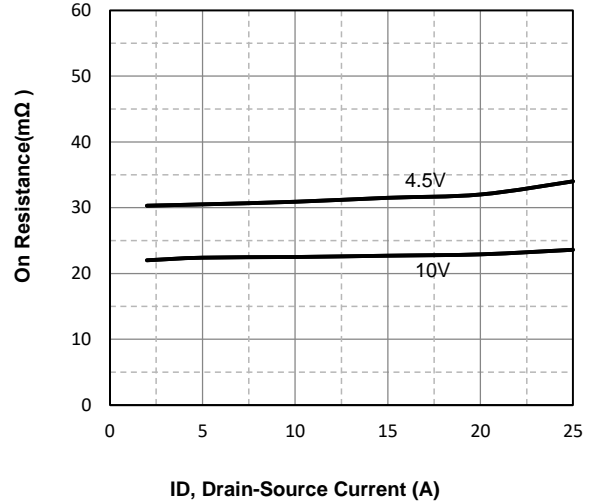


Fig4. On-Resistance Vs. Drain-Source Current

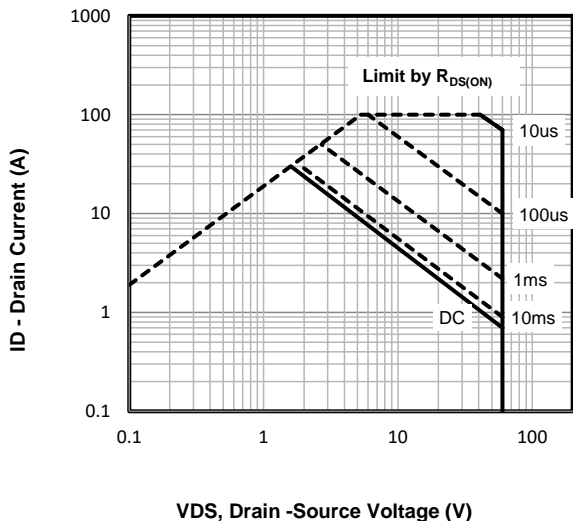


Fig5. Maximum Safe Operating Area

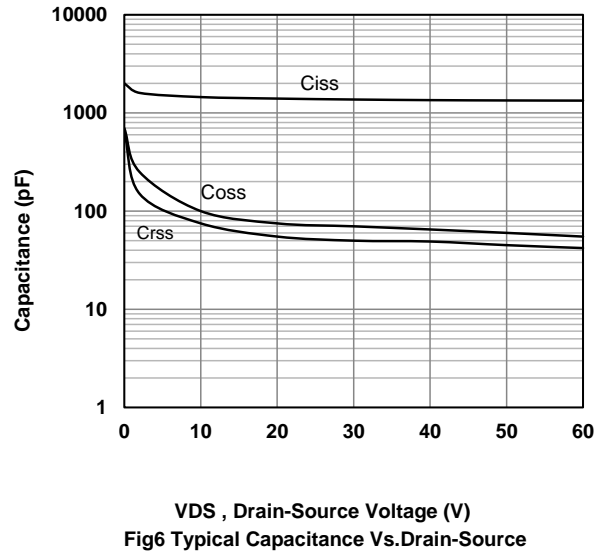
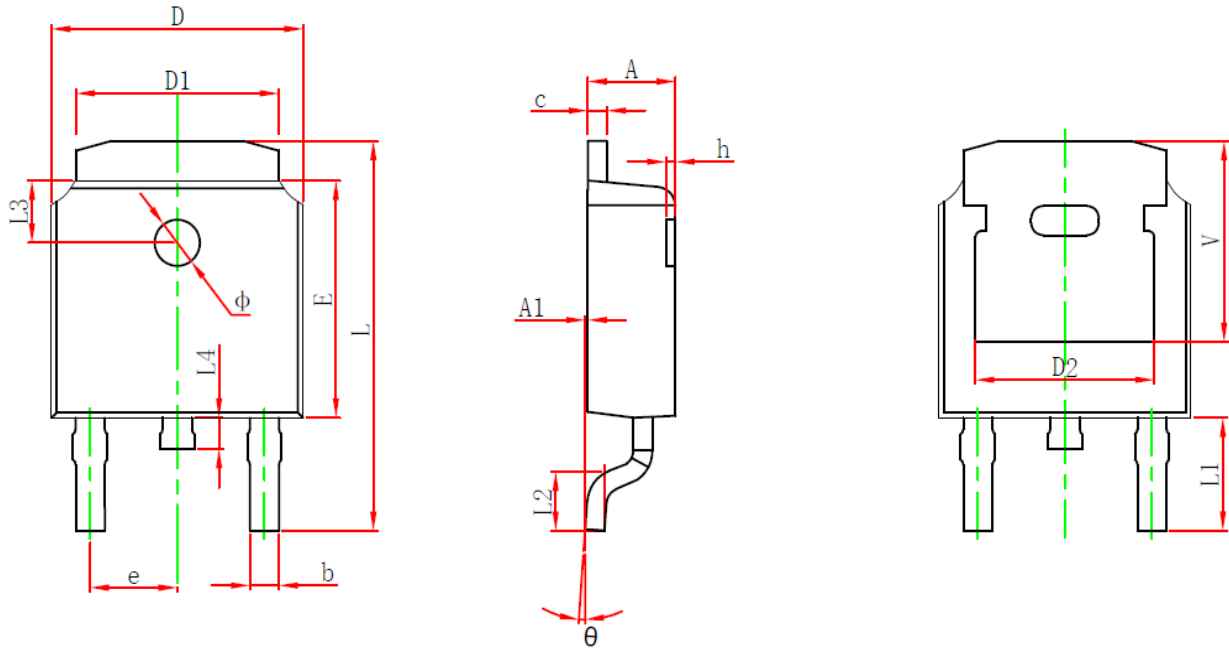


Fig6. Typical Capacitance Vs. Drain-Source

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.	