

## N-Channel MOSFET

### Features

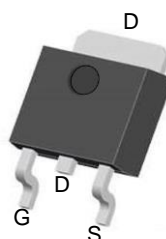
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

### Application

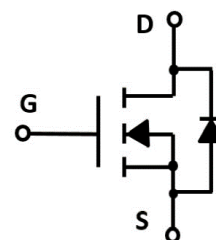
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

### Product Summary

$V_{DS}$	$R_{DS(ON)}$ MAX	$I_D$ MAX
100V	80mΩ@10V	20A
	110mΩ@4.5V	



TO-252 top view



Schematic diagram



Pb-Free



### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
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### Common Ratings (TC=25°C Unless Otherwise Noted)

$V_{DS}$	Drain-Source Breakdown Voltage	100	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	20	A

### Mounted on Large Heat Sink

$I_{DM}$	Pulse Drain Current Tested	75	A
$I_D$	Continuous Drain Current@GS=10V	$T_c=25^\circ\text{C}$ 20	A
$P_D$	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 45	W
EAS	Single pulse Avalanche Energy	15.3	mJ

Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
BV <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	100	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	VDS=100V, VGS=0V	--	--	1.0	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	1.5	2.5	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	VGS=10V, ID=12A	--	70.0	80.0	mΩ
		VGS=4.5V, ID=10A	--	80.0	95.0	
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>ISS</sub>	Input Capacitance	VDS=15V, VGS=0V, f=1MHz	--	1125	--	pF
C <sub>OSS</sub>	Output Capacitance		--	85	--	pF
C <sub>RSS</sub>	Reverse Transfer Capacitance		--	55	--	pF
<b>Switching Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	VDD=80V, ID=15A, VGS=10V	--	17	--	nC
Q <sub>gs</sub>	Gate Source Charge		--	7.5	--	nC
Q <sub>gd</sub>	Gate Drain Charge		--	10	--	nC
t <sub>d(on)</sub>	Turn-on Delay Time	VDD=50V, RL=3.3Ω, VGS=5V, RG=4.7Ω	--	25	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	430	--	nS
t <sub>d(off)</sub>	Turn-Off Delay Time		--	45	--	nS
t <sub>f</sub>	Turn-Off Fall Time		--	92	--	nS
<b>Source- Drain Diode Characteristics</b>						
V <sub>SD</sub>	Forward on voltage	T <sub>J</sub> =25°C, I <sub>S</sub> =15A,	--	--	1.2	V

Typical Operating Characteristics

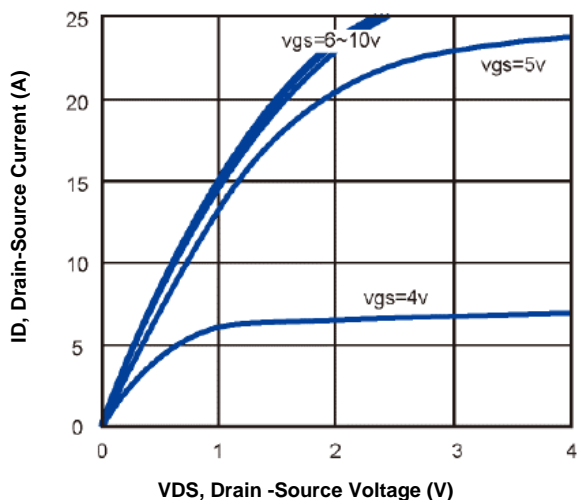


Fig1. Typical Output Characteristics

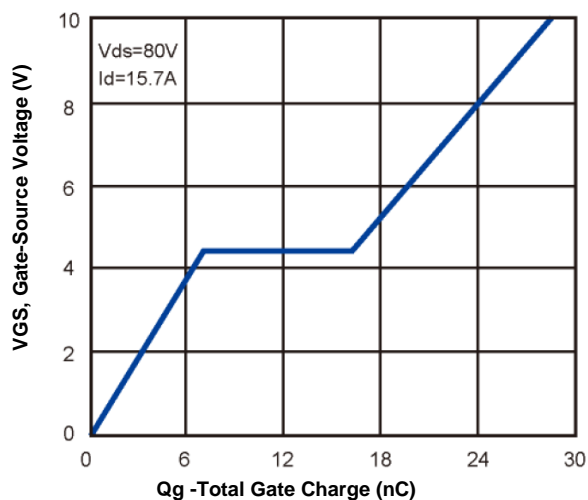


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

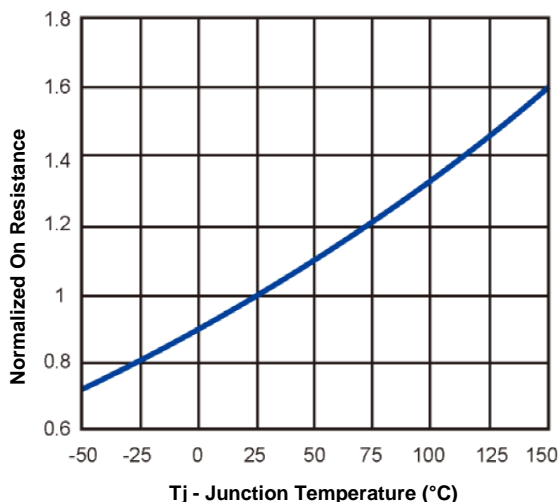


Fig3. Normalized On-Resistance Vs. Temperature

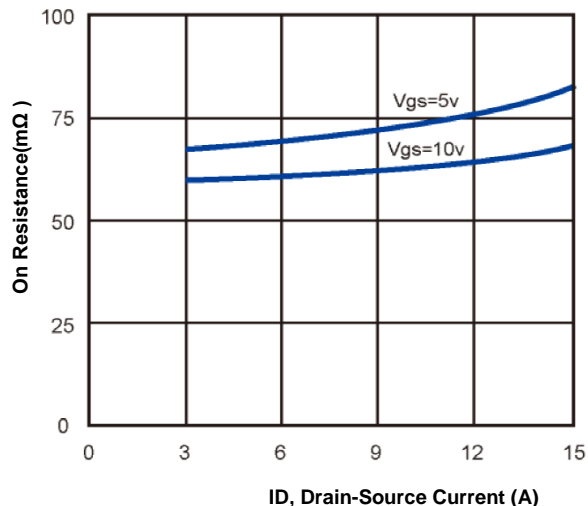


Fig4. On-Resistance Vs. Drain-Source Current

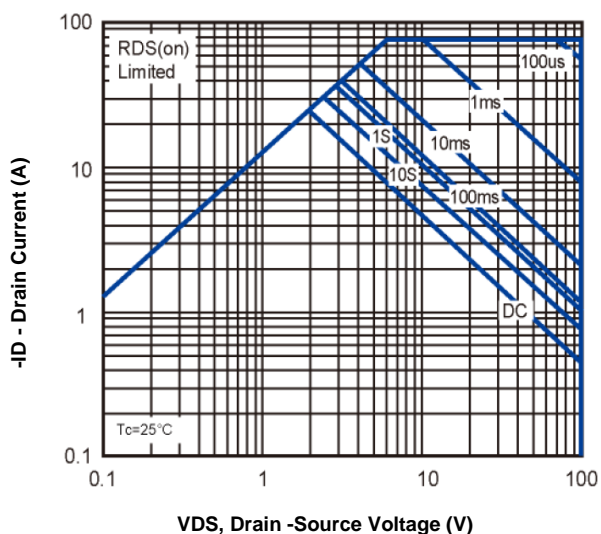


Fig7. Maximum Safe Operating Area

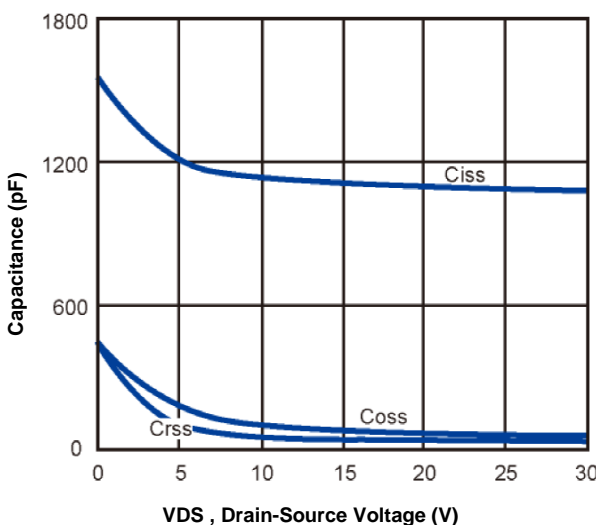
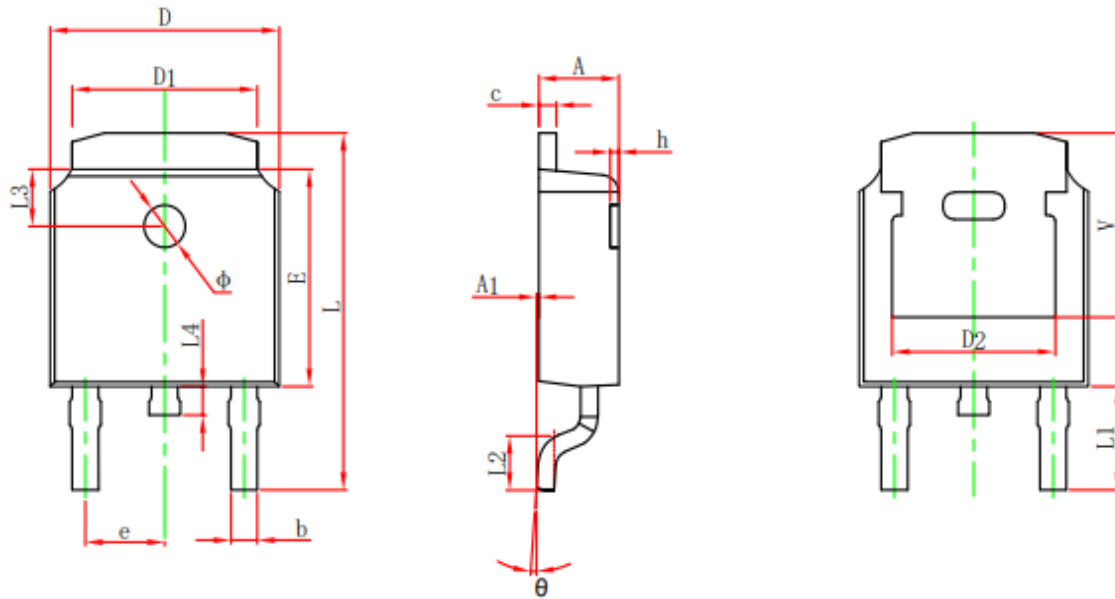


Fig6 Typical Capacitance Vs. Drain-Source Voltage

## TO-252 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
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	0.039
$\Phi$	1.100	1.300	0.043	0.051
$\theta$	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	