

## N-Channel Enhancement Mode MOSFET

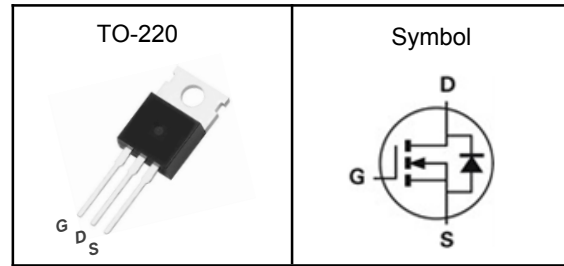
### Features

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant
- 100% UIS and Rg Tested

### Applications

- Power Management in Desktop Computer
- DC/DC Converters

### Pin Description



V <sub>DSS</sub>	150	V
R <sub>DS(ON)-Typ</sub>	11	mΩ
I <sub>D</sub>	125	A

### Absolute Maximum Ratings (T<sub>J</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	150	V	
V <sub>GSS</sub>	Gate-Source Voltage	±20	V	
T <sub>J</sub>	Maximum Junction Temperature	-55 to 150	°C	
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C	
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>③</sup>	1320	mJ	
I <sub>DM</sub> <sup>①</sup>	Pulse Drain Current Tested	500	A	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> =25°C	125	A
P <sub>D</sub>	Maximum Power Dissipation	T <sub>C</sub> =25°C	420	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
R <sub>θJC</sub>	Thermal Resistance Junction-Case <sup>①</sup>	0.29	°C/W

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C.

Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.



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**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

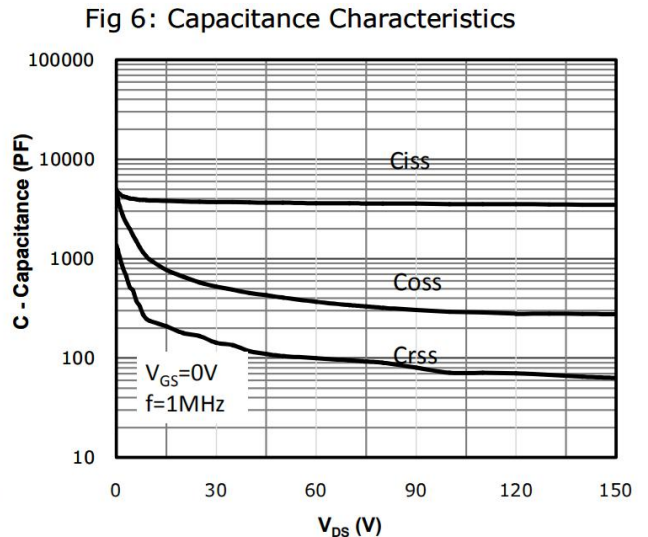
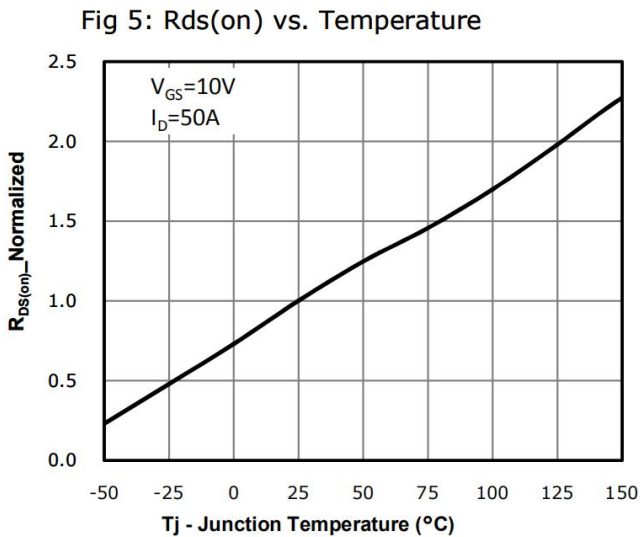
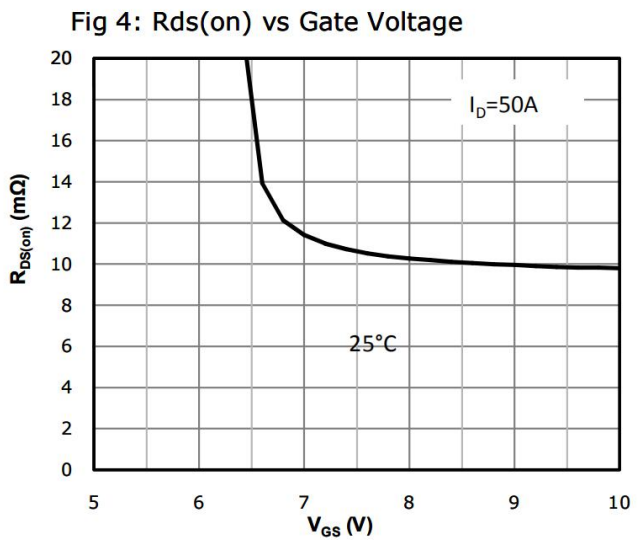
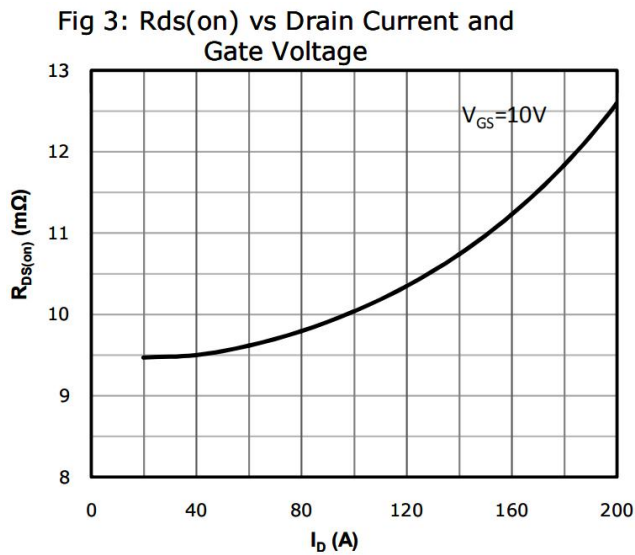
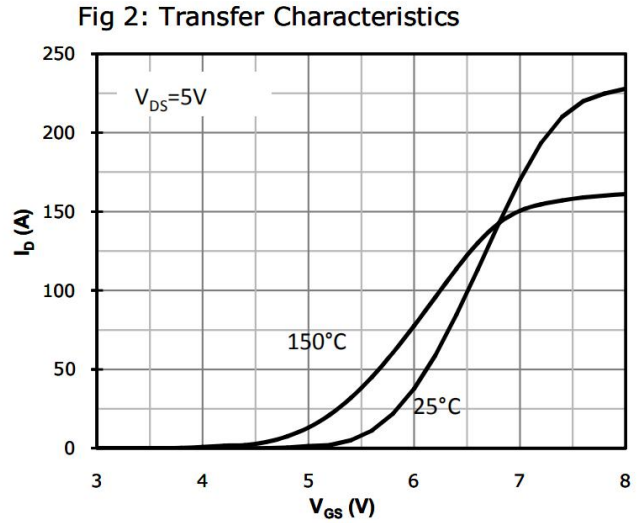
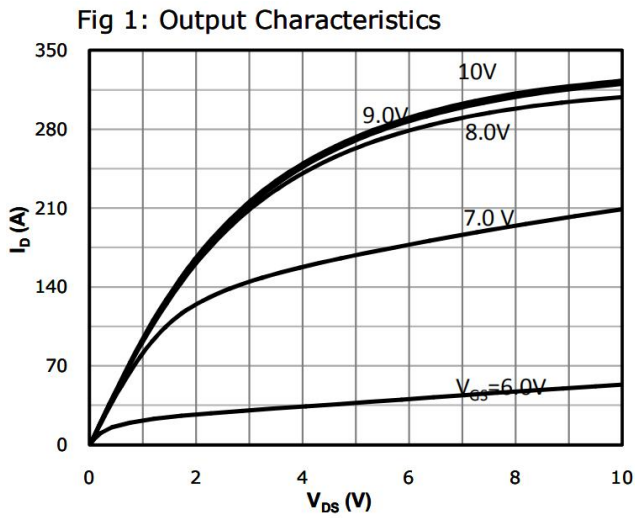
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=150V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	---	4.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=30A$	---	11	14	m $\Omega$
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=75V,$ Freq.=1MHz	---	3500	---	pF
$C_{oss}$	Output Capacitance		---	310	---	
$C_{rss}$	Reverse Transfer Capacitance		---	85	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=75V, V_{GS}=10V,$ $R_G=3\Omega, I_D=30A$	---	18	---	nS
$T_r$	Turn-on Rise Time		---	39	---	
$T_{d(off)}$	Turn-off Delay Time		---	34	---	
$T_f$	Turn-off Fall Time		---	70	---	
$Q_g$	Total Gate Charge	$V_{DS}=75V, V_{GS}=10V,$ $I_D=30A$	---	68	---	nC
$Q_{gs}$	Gate-Source Charge		---	23	---	
$Q_{gd}$	Gate-Drain Charge		---	24	---	
<b>Source-Drain Characteristics</b> ( $T_J=25^{\circ}\text{C}$ )						
$V_{SD}$	Diode Forward Voltage <sub>2</sub>	$V_{GS}=0V, I_S=30A, T_J=25^{\circ}\text{C}$	---	---	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_F=30A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	70	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	230	---	nC

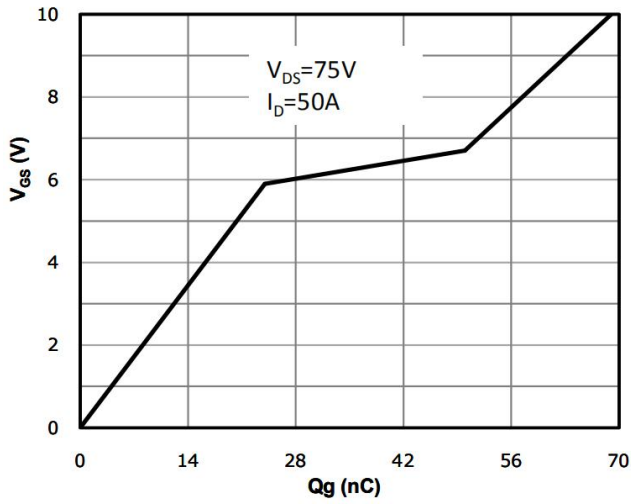
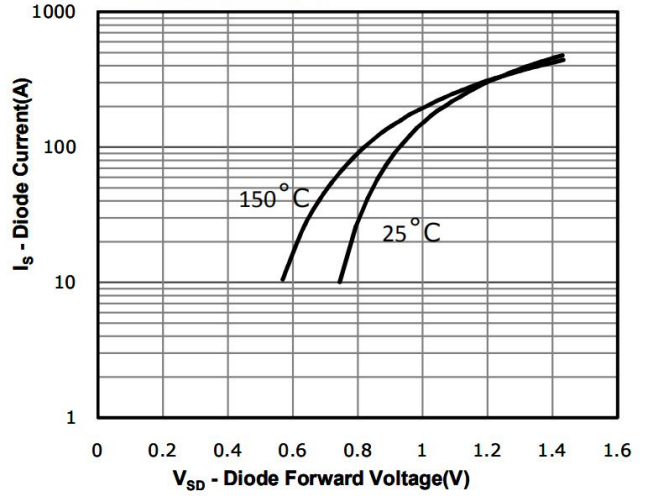
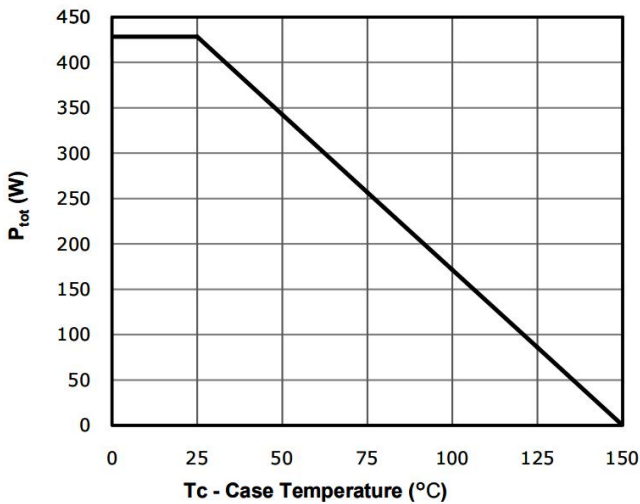
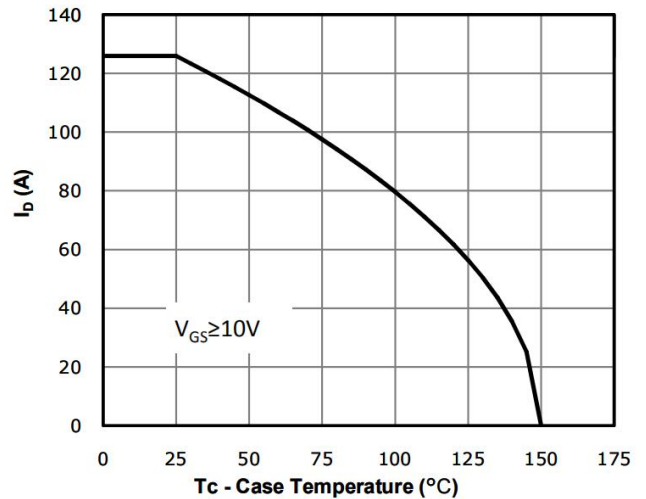
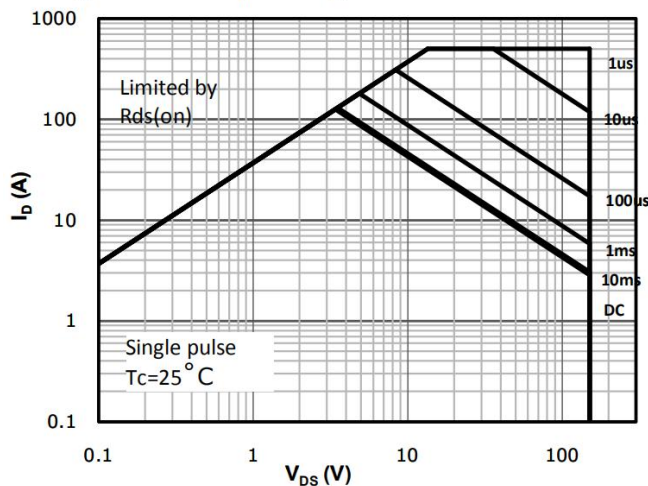
Note ④ : Pulse test (pulse width $\leq$ 300 $\mu s$ , duty cycles $\leq$ 2%).

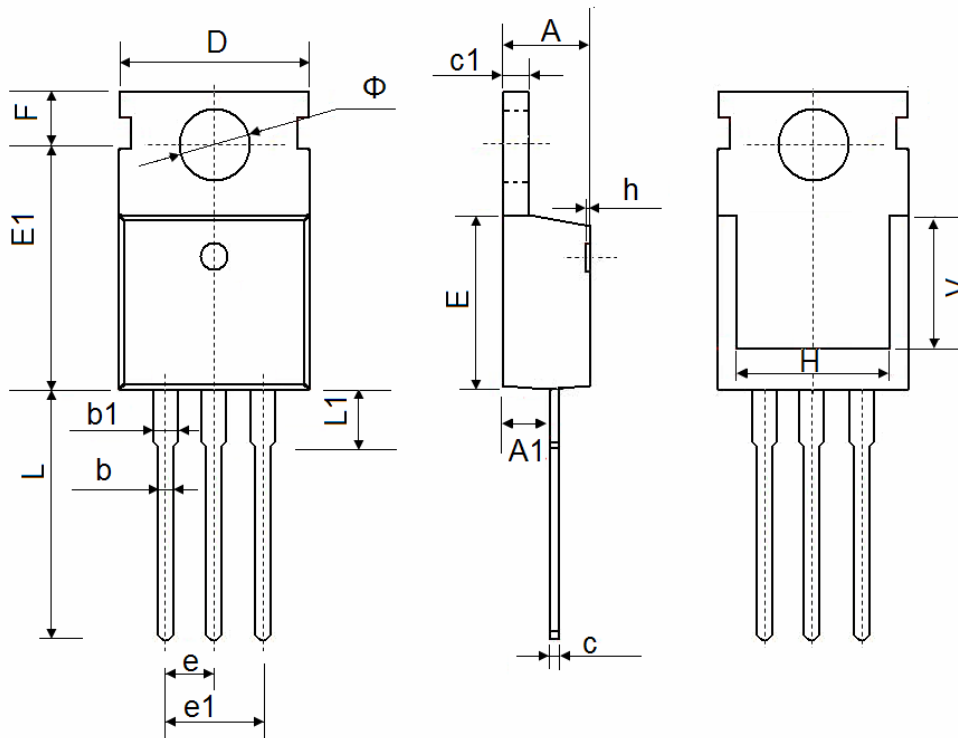
Note ⑤ : Guaranteed by design, not subject to production testing.

# N-Channel Enhancement Mode MOSFET

## Typical Characteristics



**N-Channel Enhancement Mode MOSFET**
**Fig 7: Gate Charge Characteristics**

**Fig 8: Body-diode Forward Characteristics**

**Fig 9: Power Dissipation**

**Fig 10: Drain Current Derating**

**Fig 11: Safe Operating Area**


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**TO-220 Package Outline Data**


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.350	4.650
A1	2.250	2.550
b	0.710	0.910
b1	1.170	1.400
c	0.330	0.650
c1	1.200	1.400
D	9.910	10.250
E	8.9500	9.750
E1	12.650	12.950
e	2.540 TYP.	
e1	4.980	5.180
F	2.650	2.950
H	7.900	8.100
h	0.000	0.300
L	12.700	13.500
L1	2.850	3.250
V	7.500 REF.	
Φ	3.400	3.800