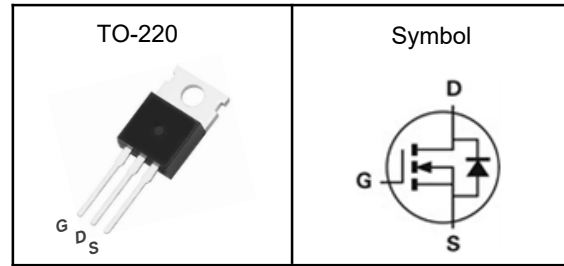


N-Channel Enhancement Mode MOSFET
Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V _{DSS}	100	V
R _{DS(ON)-Max}	11	mΩ
I _D	80	A

Absolute Maximum Ratings (T_J=25°C, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit	
V _{DSS}	Drain-Source Voltage	100	V	
V _{GSS}	Gate-Source Voltage	±20	V	
T _J	Maximum Junction Temperature	-55 to 150	°C	
T _{STG}	Storage Temperature Range	-55 to 150	°C	
I _{DM} ^①	Pulse Drain Current Tested	T _c =25°C	250	A
I _D	Continuous Drain Current	T _c =25°C	80	A
P _D	Maximum Power Dissipation	T _c =25°C	90	W
E _{AS} ^②	Avalanche Energy, Single pulse		100	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJA} ^③	Thermal Resistance-Junction to Ambient	62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case	1.8	°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 1in² FR-4 board with 1oz.

**N-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

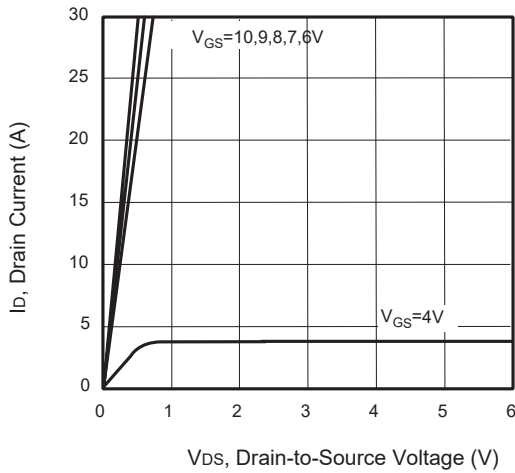
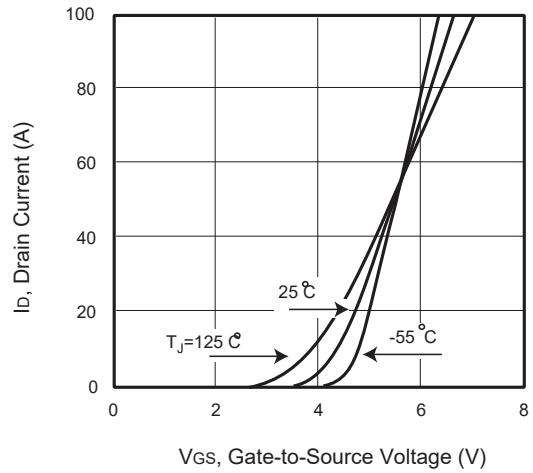
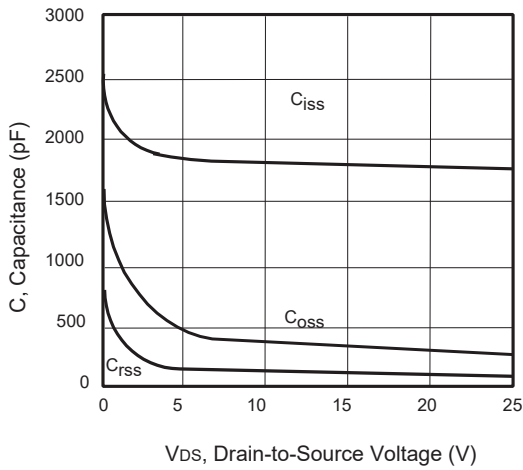
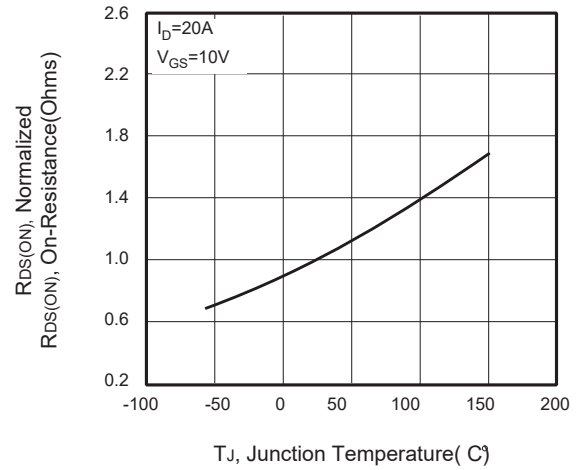
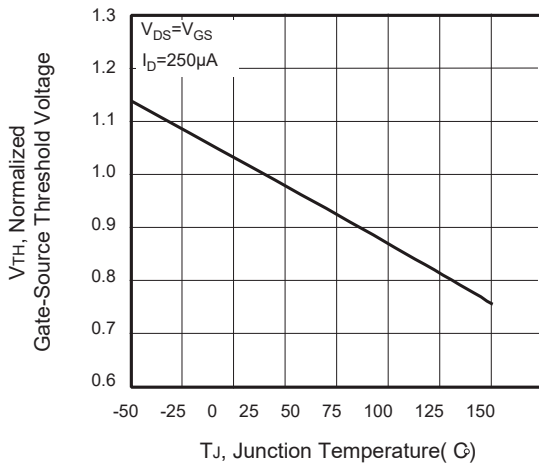
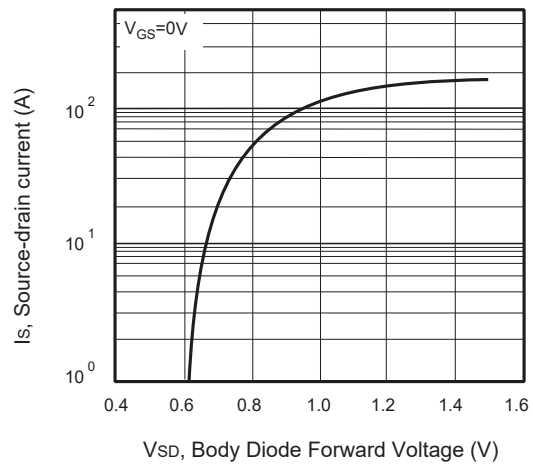
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	2.0	3.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=20A$	---	9	11	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$	---	12	16	$m\Omega$
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=50V, \text{Freq.}=1\text{MHz}$	---	1620	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	5.8	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DD}=50V, I_D=10A, R_{GEN}=2.2\Omega$	---	5.6	---	nS
T_r	Turn-on Rise Time		---	25	---	
$T_{d(off)}$	Turn-off Delay Time		---	24.6	---	
T_f	Turn-off Fall Time		---	8.6	---	
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V, I_D=10A$	---	24	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	5.4	---	
Source-Drain Characteristics						
$V_{SD}^{④}$	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	---	0.8	1.2	V
T_{rr}	Reverse Recovery Time	$I_S=8A, V_{GS}=0, dI_F/dt=100A/\mu s$	---	41.2	---	nS
Q_{rr}	Reverse Recovery Charge		---	44	---	nC

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

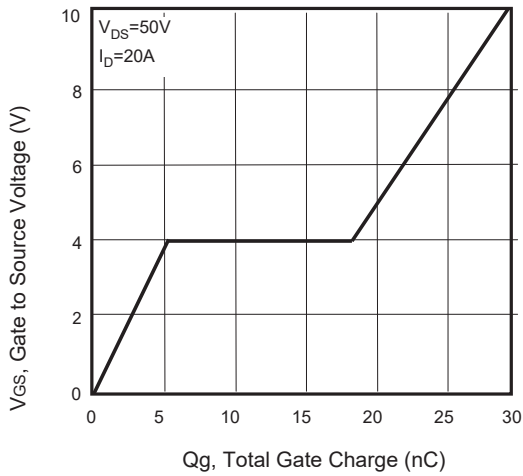
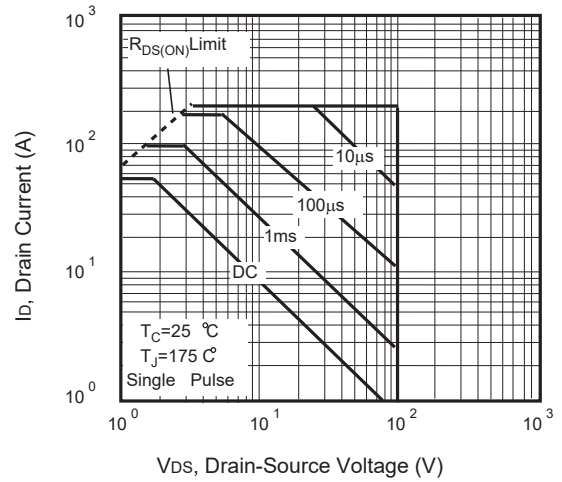
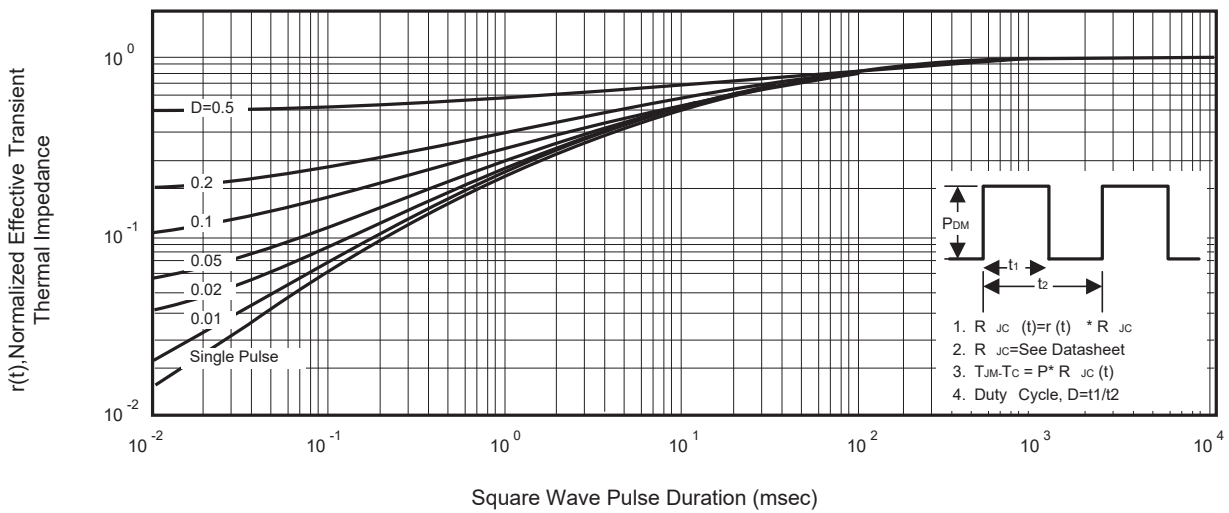
Note ⑤ : Guaranteed by design, not subject to production testing.

N-Channel Enhancement Mode MOSFET

Typical Characteristics


Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

Figure 3. Capacitance

Figure 4. On-Resistance Variation with Temperature

Figure 5. Gate Threshold Variation with Temperature

Figure 6. Body Diode Forward Voltage Variation with Source Current

N-Channel Enhancement Mode MOSFET


Figure 7. Gate Charge

Figure 8. Maximum Safe Operating Area

Figure 9. Normalized Thermal Transient Impedance Curve

N-Channel Enhancement Mode MOSFET
TO-220 Package Outline Data


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.10	4.60
A1	2.250	2.550
b	0.710	0.910
b1	1.170	1.180
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	12.100	13.100
L1	2.850	3.250
V	7.500 REF.	
Φ	3.400	3.800