

N-Channel Enhancement Mode MOSFET

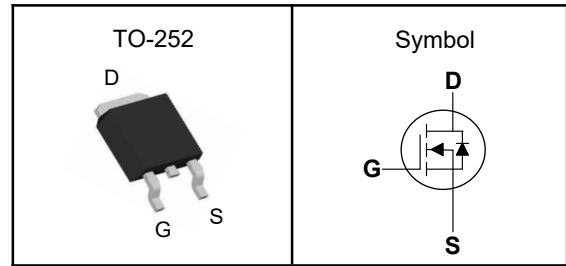
Features

- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V_{DSS}	200	V
$R_{DS(ON)-Typ}$	40	m Ω
I_D	25	A

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	200	V
V_{GSS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ^③	320	mJ
$I_{DM}^{①}$	Pulse Drain Current Tested	100	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 25	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 135	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ^①	60	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ^①	1.11	$^\circ\text{C}/\text{W}$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^\circ\text{C}$.

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.



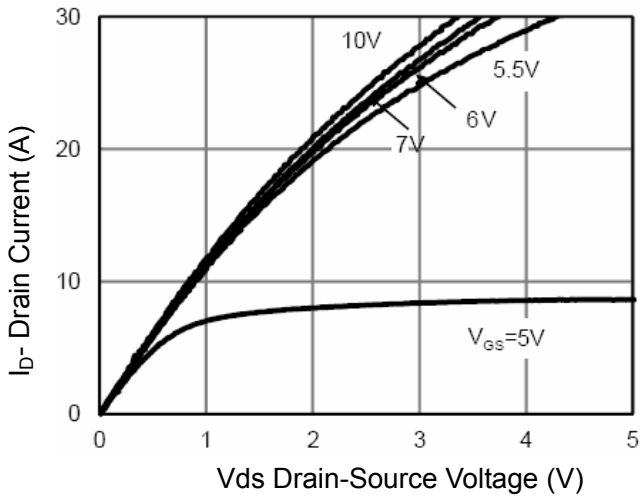
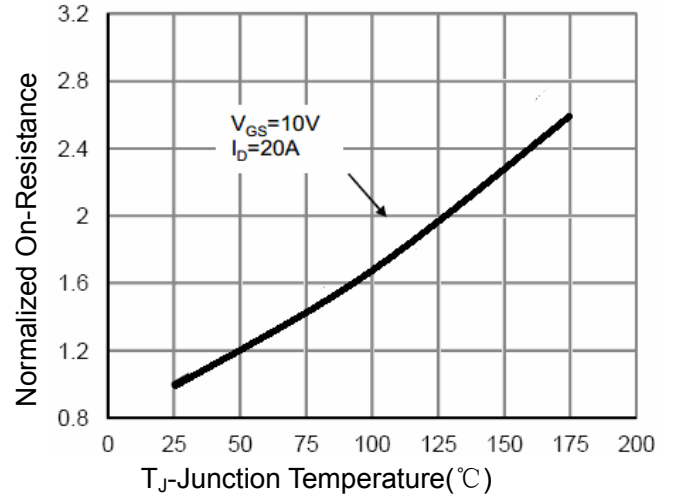
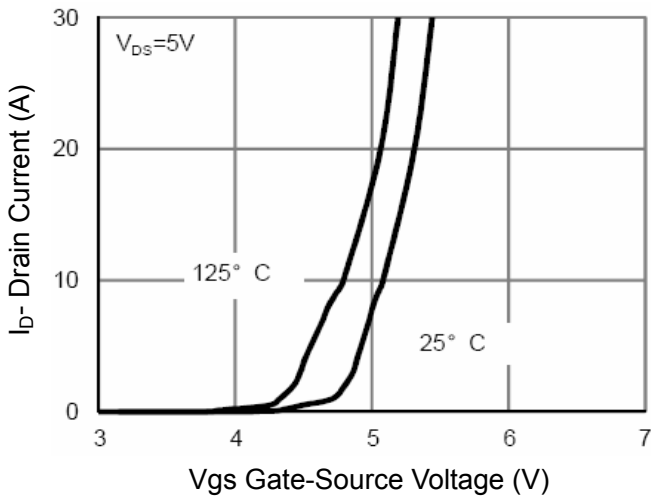
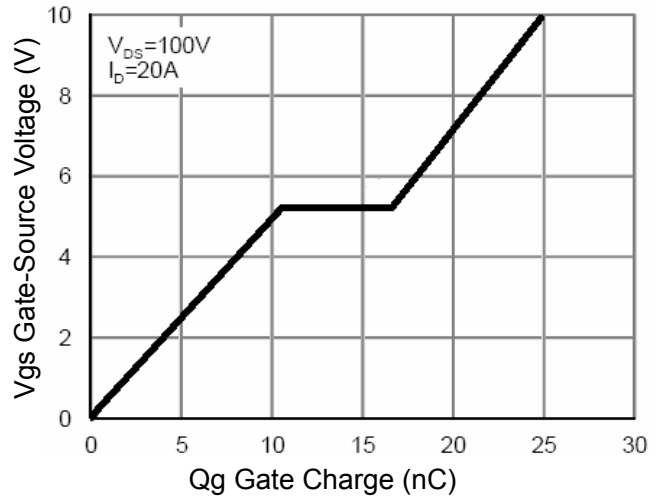
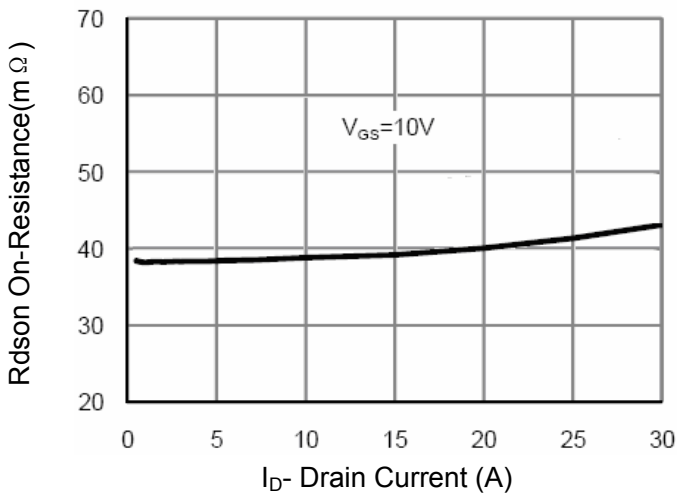
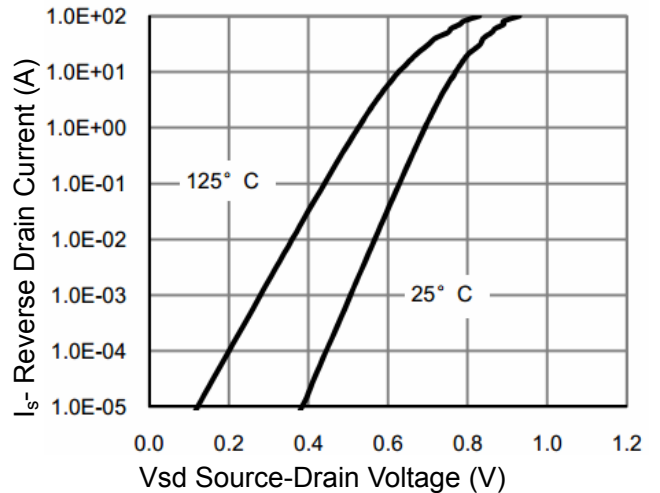
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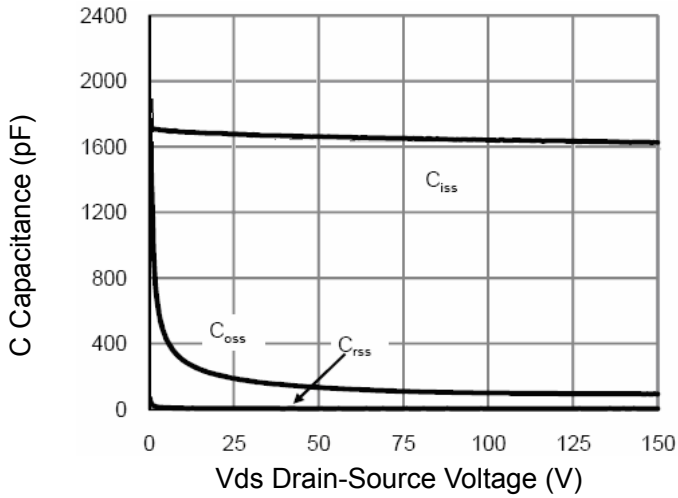
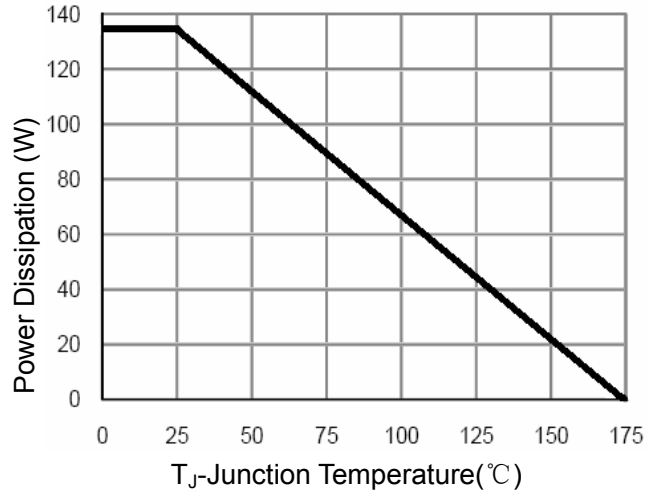
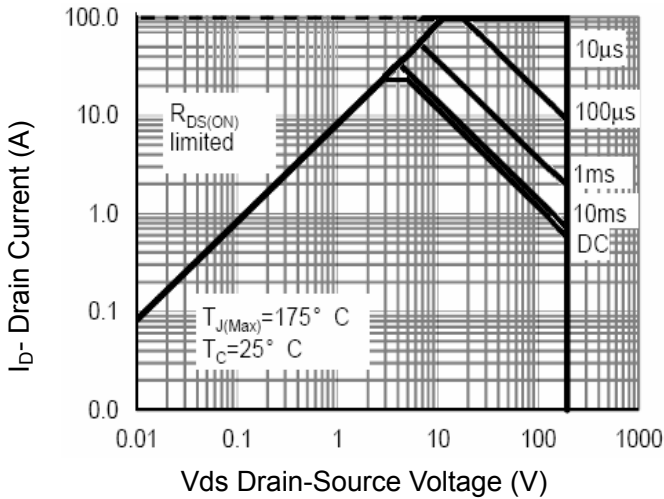
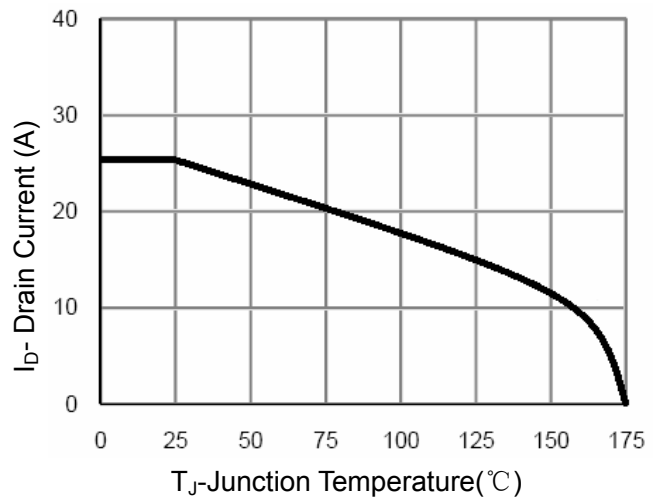
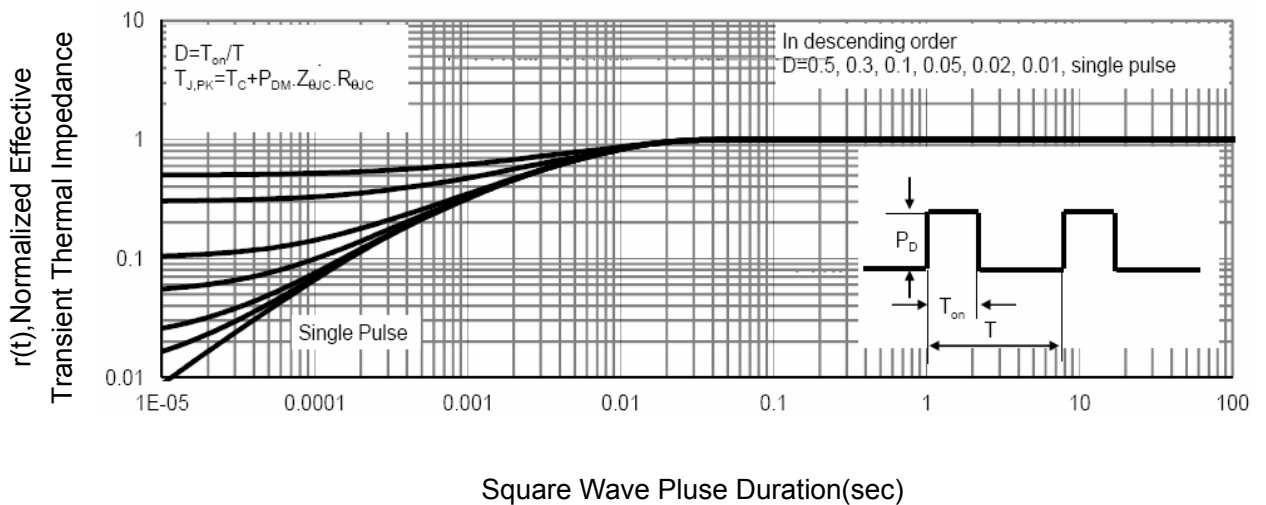
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

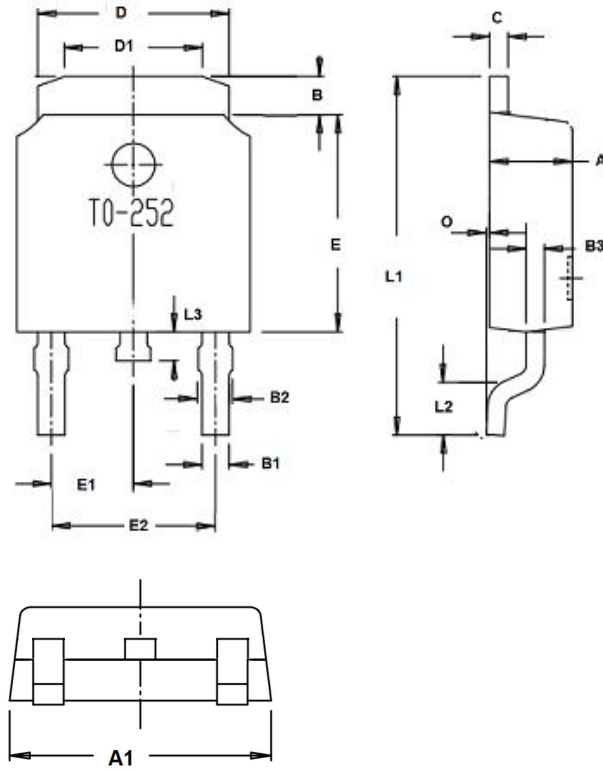
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250mA$	200	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=200V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	---	4.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=20A$	---	40	50	$m\Omega$
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=100V,$ Freq.=1MHz	---	1635	---	pF
C_{oss}	Output Capacitance		---	128	---	
C_{rss}	Reverse Transfer Capacitance		---	3	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=100V,$ $V_{GS}=10V, R_G=3\Omega$	---	7	---	nS
T_r	Turn-on Rise Time		---	9	---	
$T_{d(off)}$	Turn-off Delay Time		---	25	---	
T_f	Turn-off Fall Time		---	5	---	
Q_g	Total Gate Charge	$V_{DS}=100V,$ $V_{GS}=10V, I_D=20A$	---	25	---	nC
Q_{gs}	Gate-Source Charge		---	10.6	---	
Q_{gd}	Gate-Drain Charge		---	6	---	
Source-Drain Characteristics ($T_J=25^{\circ}\text{C}$)						
V_{SD}	Diode Forward Voltage ₂	$V_{GS}=0V, I_S=20A, T_J=25^{\circ}\text{C}$	---	---	1.2	V
t_{rr}	Reverse Recovery Time	$I_F=20A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	45	---	nS
Q_{rr}	Reverse Recovery Charge		---	160	---	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.

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Typical Characteristics

Figure 1 Output Characteristics

Figure 4 Rdson-Junction Temperature

Figure 2 Transfer Characteristics

Figure 5 Gate Charge

Figure 3 Rdson- Drain Current

Figure 6 Source- Drain Diode Forward

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Figure 7 Capacitance vs Vds

Figure 9 Power De-rating

Figure 8 Safe Operation Area

Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

N-Channel Enhancement Mode MOSFET
TO-252 Package Outline Dimensions


Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.96	1.42
B1	0.74	0.86
B2	0.74	0.94
C	Typ0.5	
D	5.33	5.53
D1	3.65	4.05
E	6.0	6.2
E1	Typ2.29	
E2	Typ4.58	
O	0	0.15
L1	9.9	10.5
L2	Typ1.65	
L3	0.6	1.0
All Dimensions in millimeter		