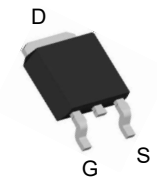
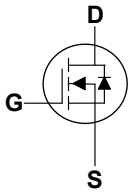
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

TO-252	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	100	V
$R_{DS(ON)-Typ}$	25	mΩ
I_D	30	A

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

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	-55 to 175	℃
T_{STG}	Storage Temperature Range	-55 to 175	℃
E_{AS}	Single Pulse Avalanche Energy③	200	mJ
I_{DM}①	300μs Pulse Drain Current Tested	120	A
I_D	Continuous Drain Current	30	A
P_D	Maximum Power Dissipation	85	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case①	1.8	℃/W

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

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

Note ③: Surface Mounted on 1in^2 FR-4 board with 1oz.

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Electrical Characteristics (T_J=25℃, 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=250uA	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.3	---	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_D=10A	---	25	35	mΩ
		V_{GS}=4.5V, I_D=10A	---	32	45	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, Freq.=1MHz	---	2475	---	pF
C_{oss}	Output Capacitance		---	96	---	
C_{rss}	Reverse Transfer Capacitance		---	79	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DS}=50V,V_{GS}=10V , RL=5Ω,R_G=3Ω	---	9	---	nS
T_r	Turn-on Rise Time		---	9	---	
$T_{d(off)}$	Turn-off Delay Time		---	32	---	
T_f	Turn-off Fall Time		---	8	---	
Q_g	Total Gate Charge	V_{DS}=50V,V_{GS}=10V , I_D=10A	---	67	---	nC
Q_{gs}	Gate-Source Charge		---	9.4	---	
Q_{gd}	Gate-Drain Charge		---	15.5	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=10A, V_{GS}=0V	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=10A,V_{GS}=0V, dI_F/dt=100A/us	---	32	---	nS
Q_{rr}	Reverse Recovery Charge		---	53	---	nC

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

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

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Typical Characteristics

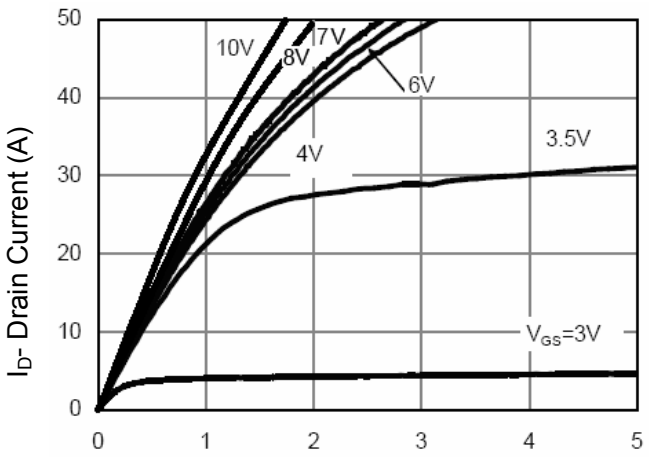

Figure 1 Output Characteristics

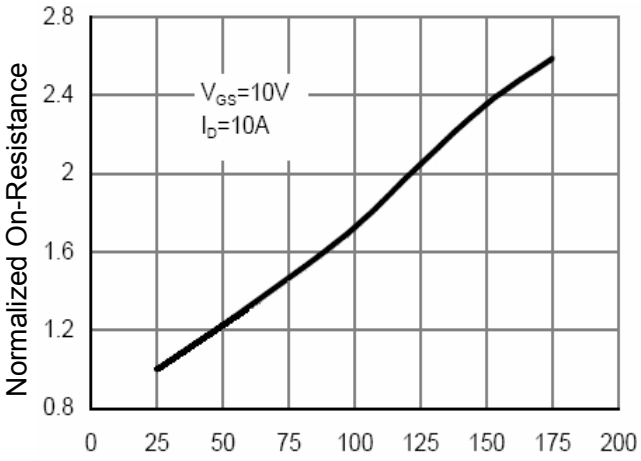

Figure 4 Rdson-JunctionTemperature

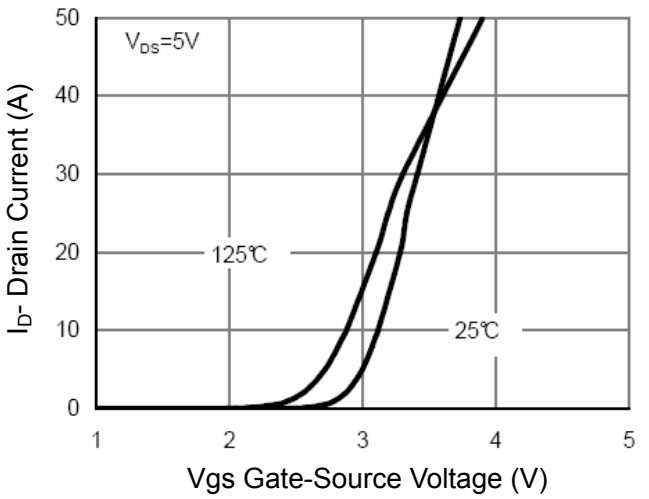

Figure 2 Transfer Characteristics

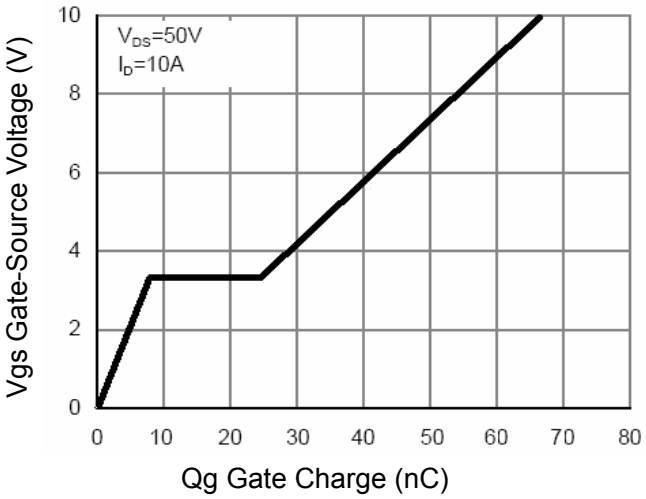

Figure 5 Gate Charge

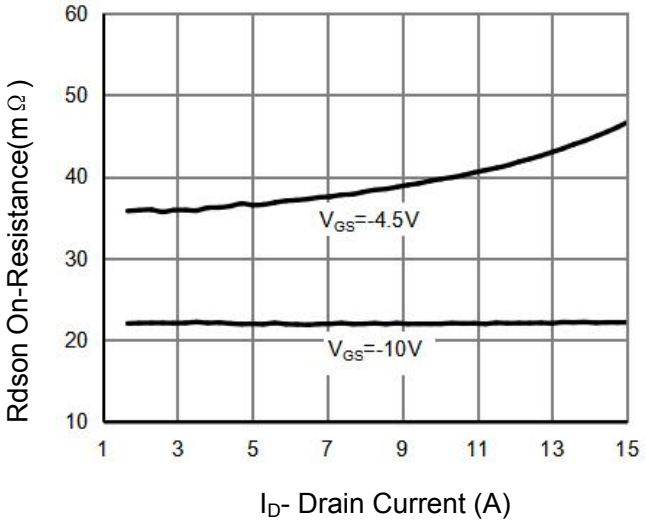

Figure 3 Rdson- Drain Current

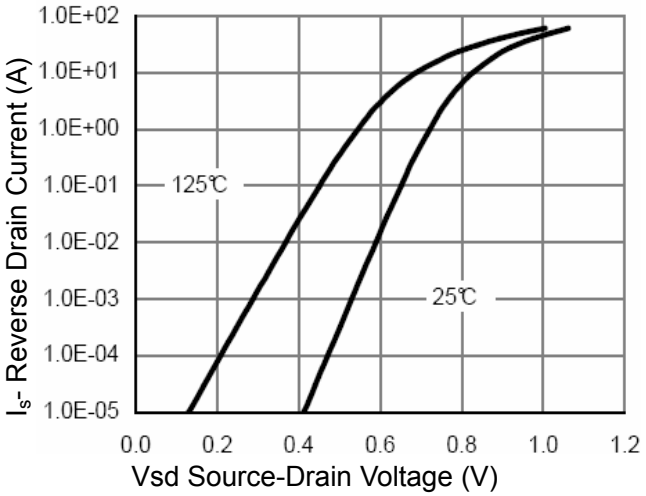

Figure 6 Source- Drain Diode Forward

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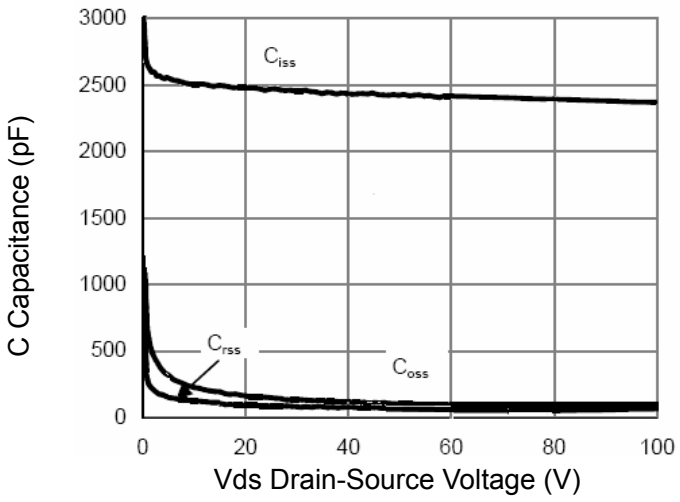

Figure 7 Capacitance vs Vds

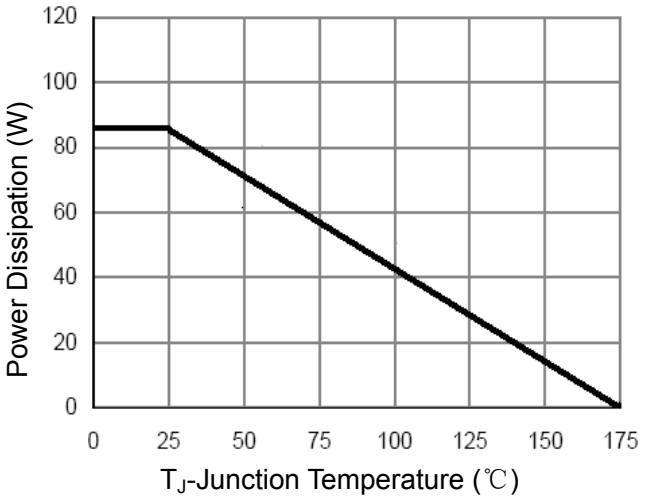

Figure 9 Power De-rating

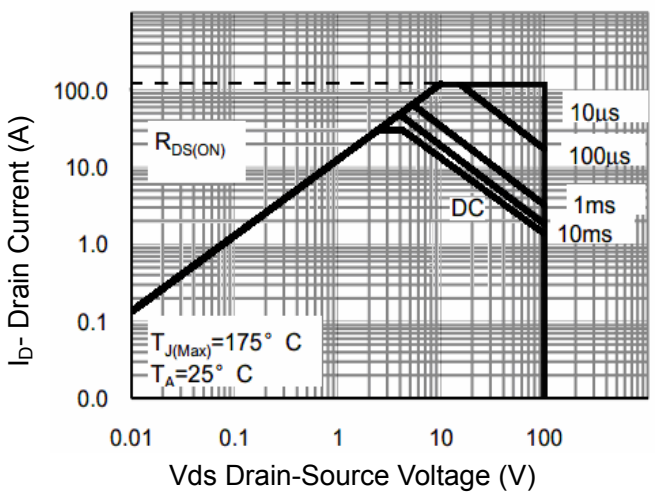

Figure 8 Safe Operation Area

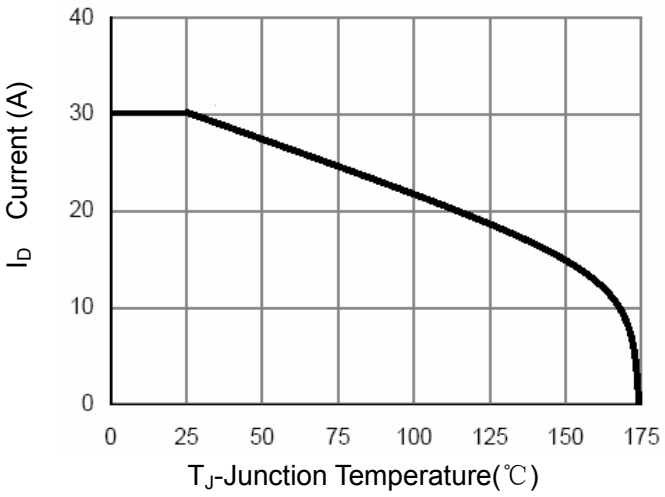

Figure 10ID Current- Junction Temperature

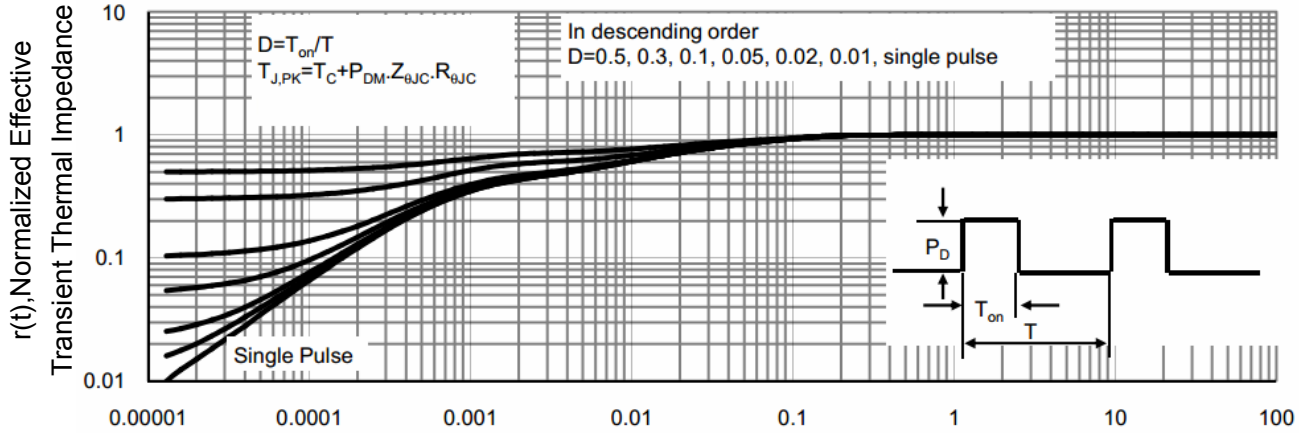

Figure 11 Normalized Maximum Transient Thermal Impedance

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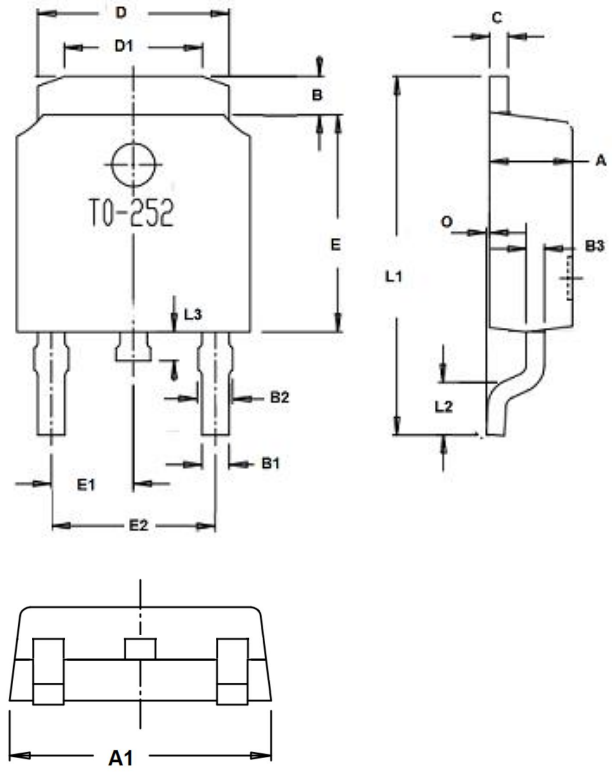
TO-252 Package Outline Dimensions



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		