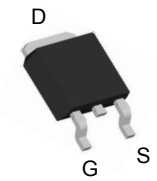
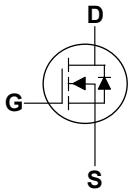
N-Channel Enhancement Mode MOSFET

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}	80	V
$R_{DS(ON)-Typ}$	5	mΩ
I_D	100	A

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		80	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
E_{AS}	Single Pulse Avalanche Energy[3]		211	mJ
I_{DM} ①	Pulse Drain Current Tested		400	A
I_D	Continuous Drain Current	T_C=25°C	100	A
P_D	Maximum Power Dissipation	T_C=25°C	154	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient[1] （Max）	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	0.81	℃/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=250mA	80	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	2	---	4	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=30A	---	5	8	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Freq.=1MHz	---	2200	---	pF
C_{oss}	Output Capacitance		---	540	---	
C_{rss}	Reverse Transfer Capacitance		---	15	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=40V , V_{GS}=10V , R_G=6Ω, I_D=50A	---	10	---	nS
T_r	Turn-on Rise Time		---	15	---	
$T_{d(off)}$	Turn-off Delay Time		---	30	---	
T_f	Turn-off Fall Time		---	35	---	
Q_g	Total Gate Charge	V_{DS}=40V , V_{GS}=10V , I_D=50A	---	32	---	nC
Q_{gs}	Gate-Source Charge		---	9.5	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}	Diode Forward Voltage②	V_{GS}=0V , I_S=1A ,T_J=25℃	---	0.8	1.1	V
t_{rr}	Reverse Recovery Time	I_S=10A，V_R=50V di/dt=100A/μs，T_J=25℃	---	50	---	nS
Q_{rr}	Reverse Recovery Charge		---	80	---	nC

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

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

Typical Characteristics

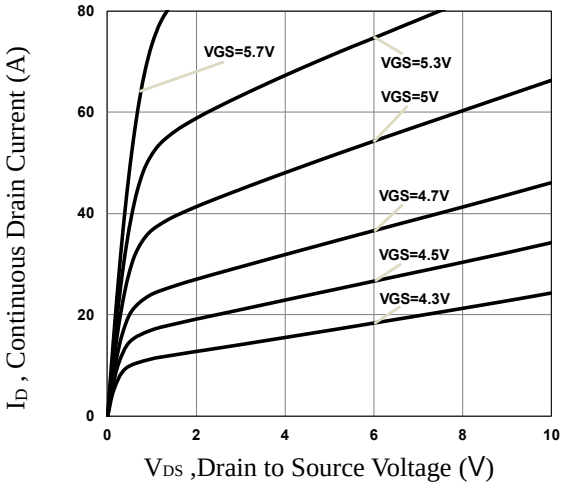


Fig.1 Typical Output Characteristics

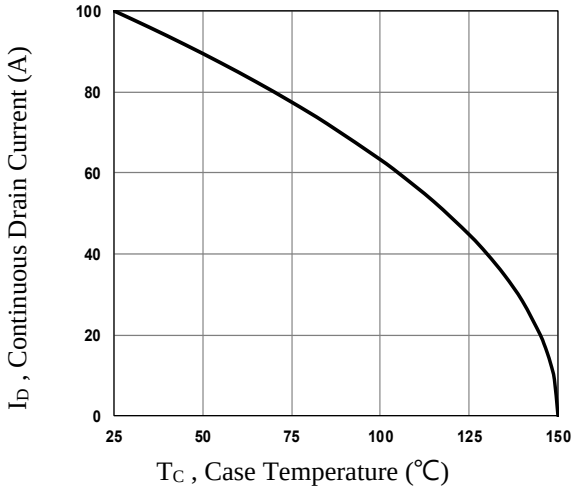


Fig.2 Continuous Drain Current vs. T_C

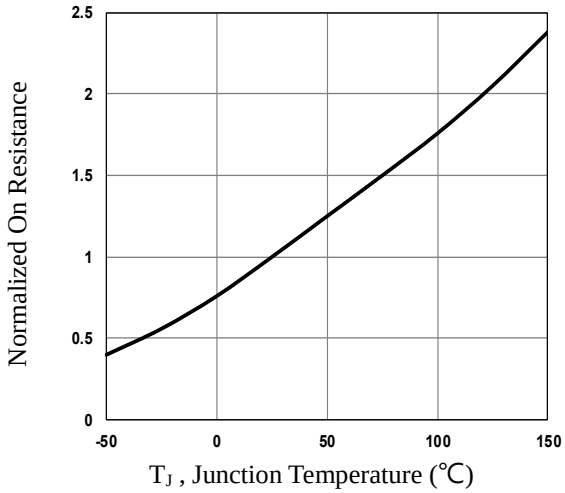


Fig.3 Normalized RDSON vs. T_J

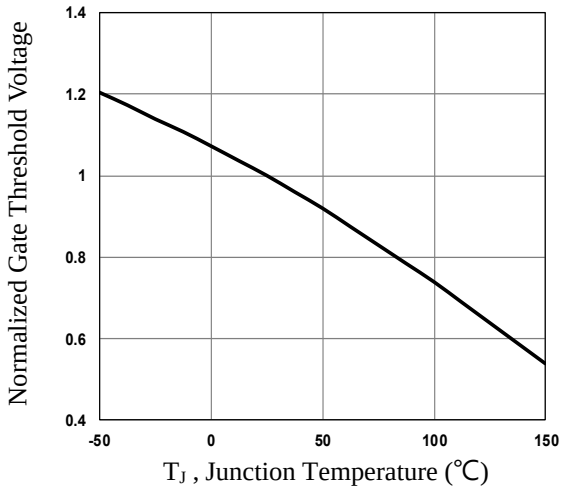


Fig.4 Normalized V_{th} vs. T_J

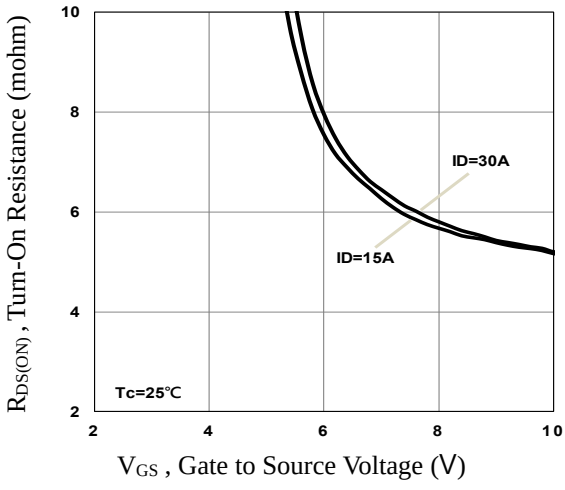


Fig.5 Turn-On Resistance vs. V_{GS}

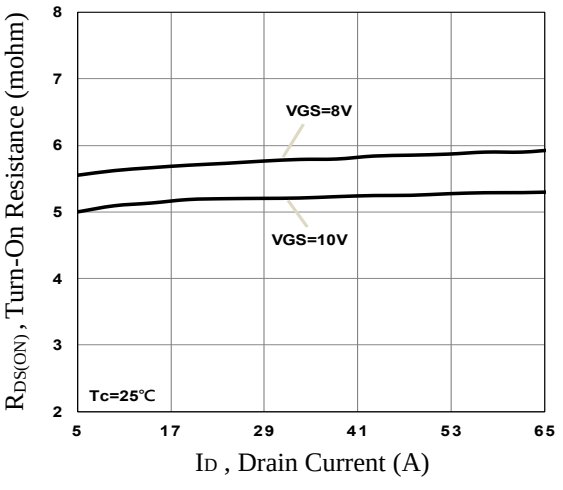


Fig.6 Turn-On Resistance vs. ID

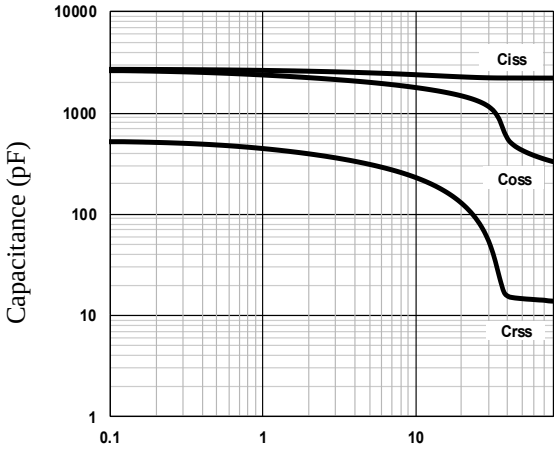


Fig.7 Capacitance Characteristics

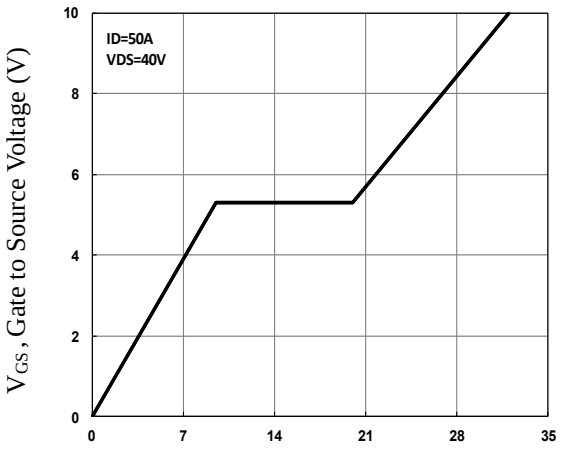


Fig.8 Gate Charge Characteristics

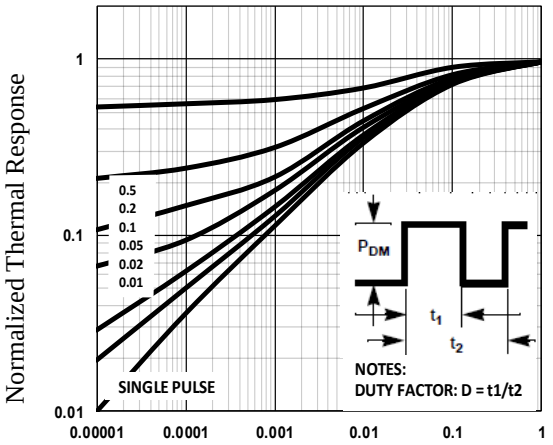


Fig.9 Normalized Transient Impedance

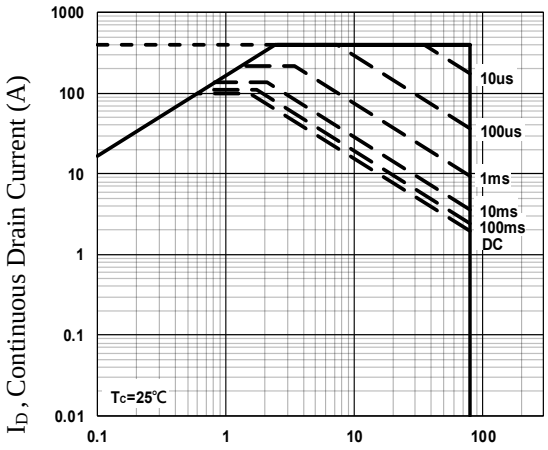
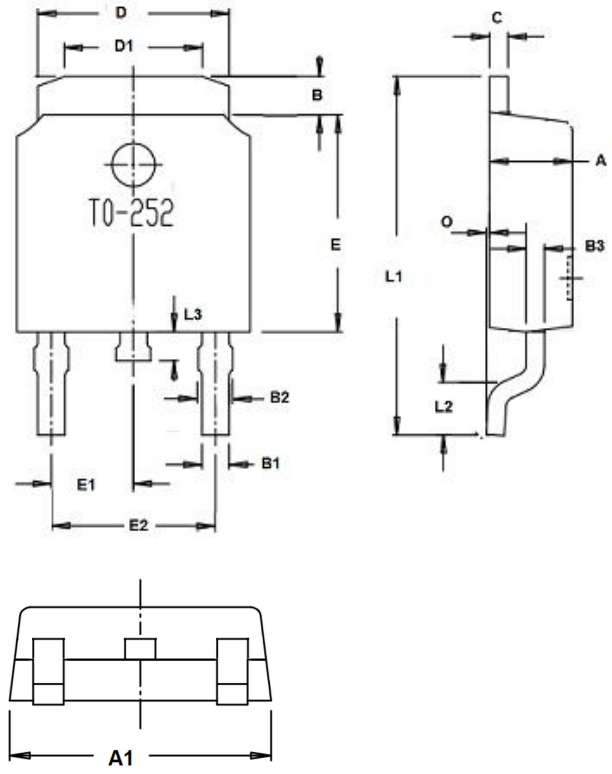


Fig.10 Maximum Safe Operation Area

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		