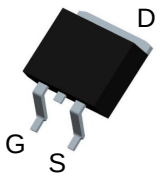
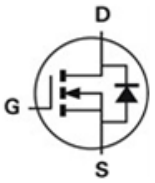
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

TO-263	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	120	V
$R_{DS(ON)-Typ}$	10	mΩ
I_D	60	A

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

Symbol	Parameter		N-Channel	Unit
V_{DSS}	Drain-Source Voltage		120	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 Energy③		290	mJ
I_{DM} ①	Pulse Drain Current Tested		240	A
I_D	Continuous Drain Current	T_C=25°C	60	A
P_D	Maximum Power Dissipation	T_C=25°C	105	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance Junction-Case①	1.4	℃/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 1in² 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	120	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	2	3	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	---	10	11	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=60V, Freq.=1MHz	---	2500	---	pF
C_{oss}	Output Capacitance		---	273	---	
C_{rss}	Reverse Transfer Capacitance		---	27	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=50V ,I_D=30A, V_{GS}=10V , R_G=3Ω	---	11	---	nS
T_r	Turn-on Rise Time		---	7.5	---	
$T_{d(off)}$	Turn-off Delay Time		---	26	---	
T_f	Turn-off Fall Time		---	4	---	
gfs	Forward Transconductance	V_{DS}=5V , I_D=30A	---	40	---	S
Q_g	Total Gate Charge	V_{DS}=60V , V_{GS}=10V , I_D=30A	---	37	---	nC
Q_{gs}	Gate-Source Charge		---	14	---	
Q_{gd}	Gate-Drain Charge		---	8	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}④	Diode Forward Voltage	I_F=60A, V_{GS}=0V	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=I_S,di/dt=100Aμs, T_J=25℃	---	58	---	nS
Q_{rr}	Reverse Recovery Charge		---	149	---	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

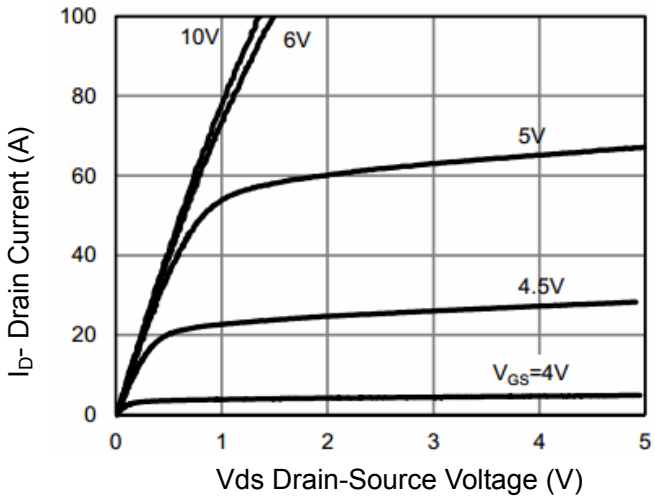

Figure 1 Output Characteristics

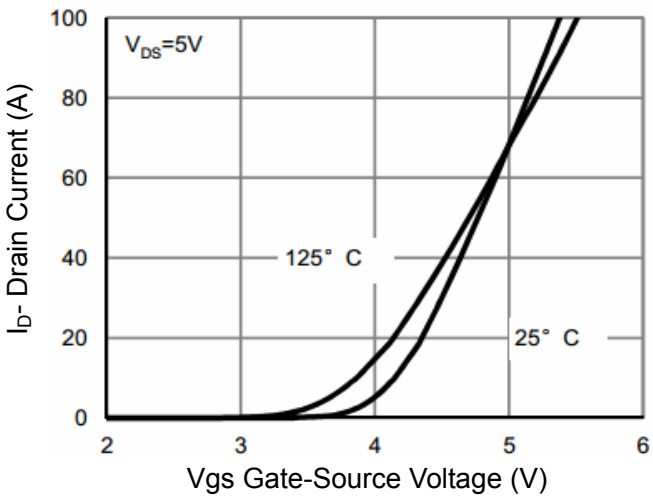

Figure 2 Transfer Characteristics

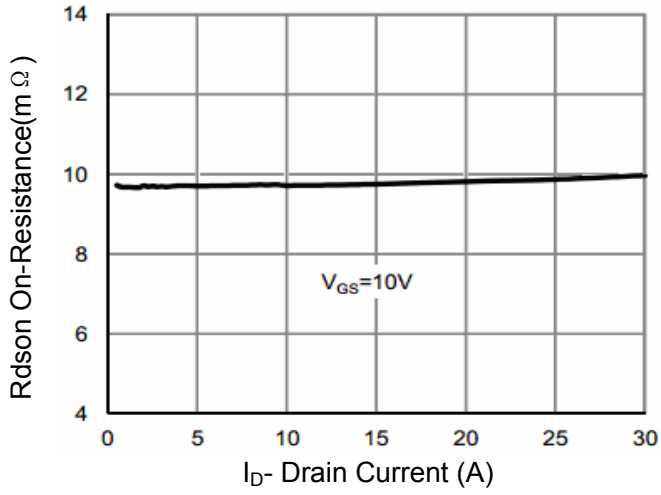

Figure 3 Rdson- Drain Current

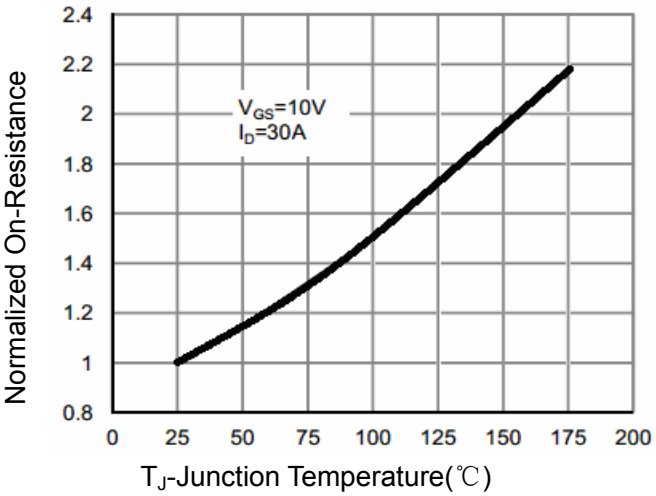

Figure 4 Rdson-JunctionTemperature

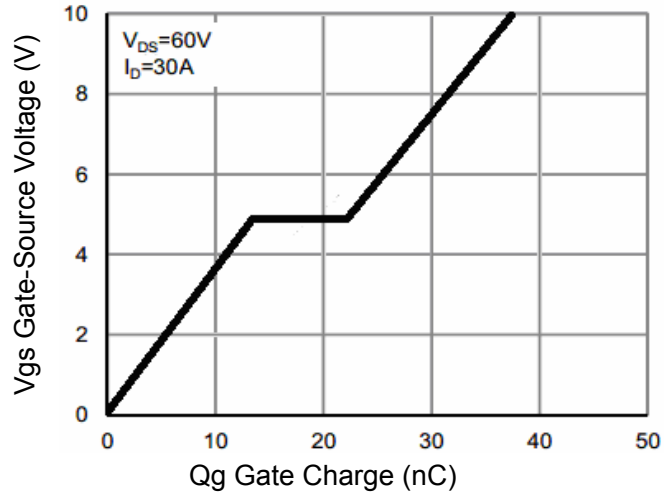

Figure 5 Gate Charge

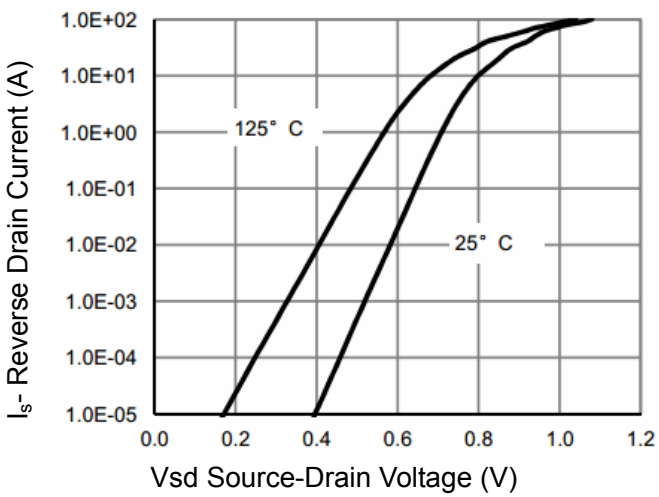

Figure 6 Source- Drain Diode Forward

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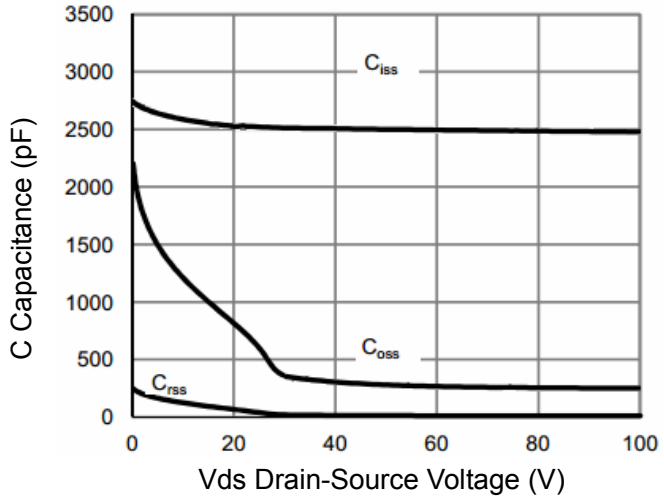

Figure 7 Capacitance vs Vds

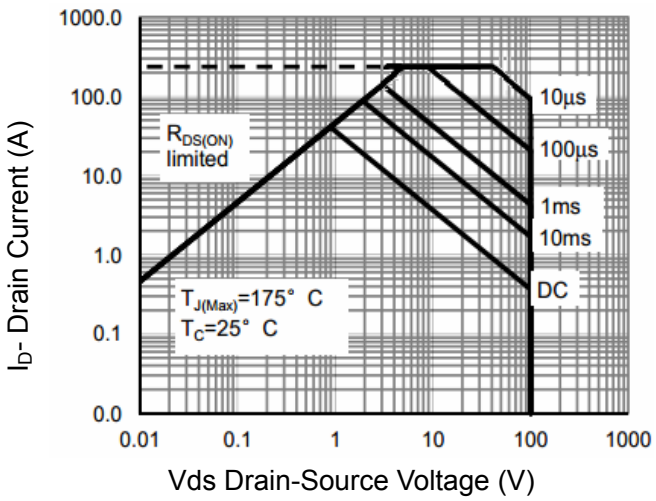

Figure 8 Safe Operation Area

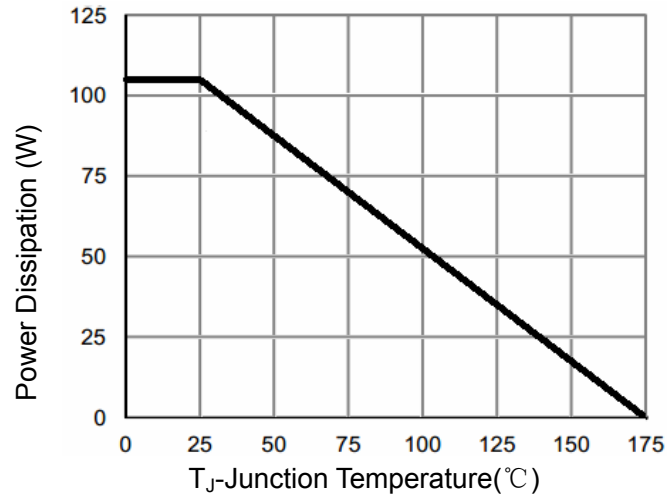

Figure 9 Power De-rating

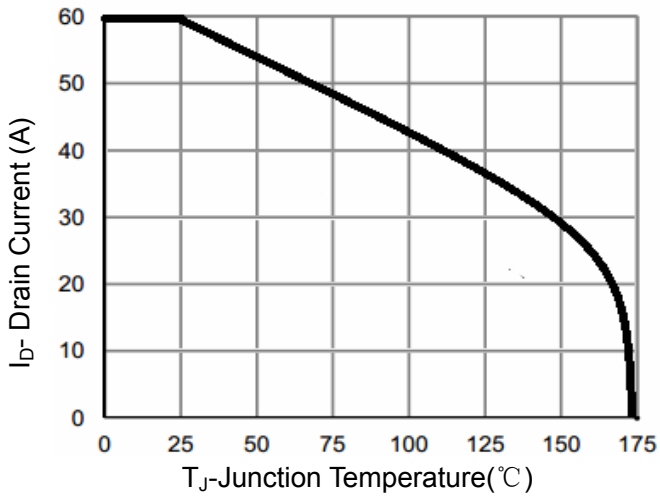

Figure 10 Current De-rating

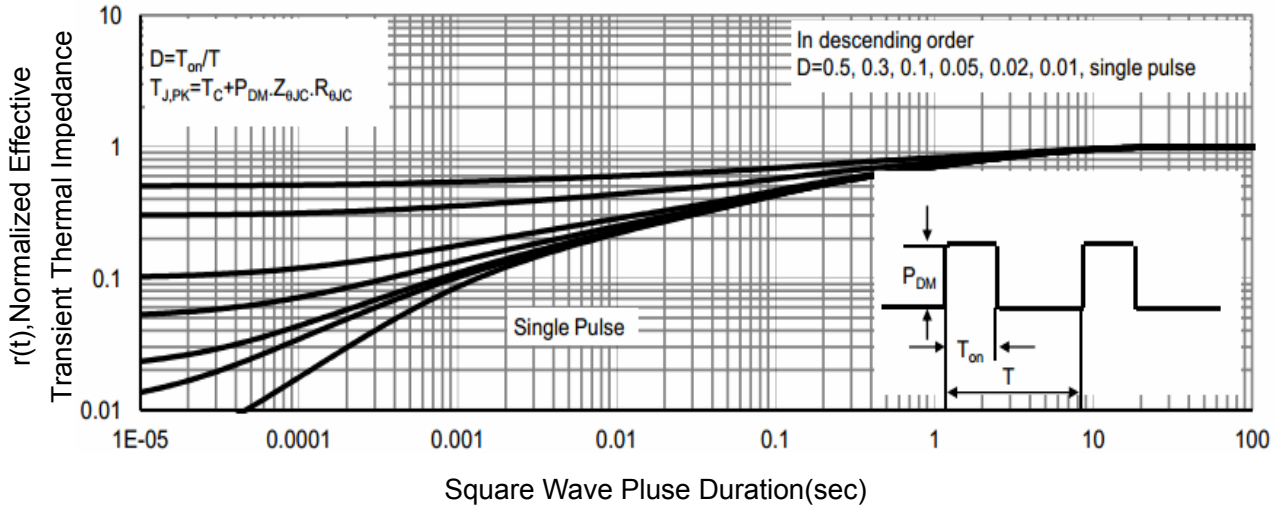

Figure 11 Normalized Maximum Transient Thermal Impedance

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TO-263 Package Outline Data