

N-Channel Enhancement Mode MOSFET

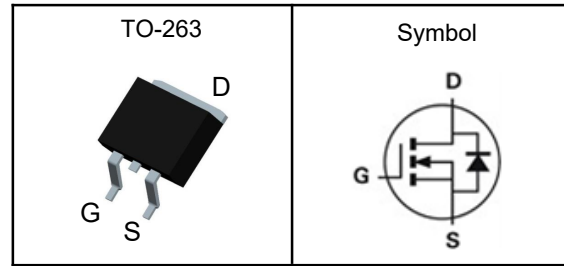
Features

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

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V_{DSS}	100	V
$R_{DS(ON)-Typ}$	2.7	m Ω
I_D	160	A

Absolute Maximum Ratings ($T_J=25^\circ\text{C}$, 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	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	640	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$	A
	Continuous Drain Current	$T_c=100^\circ\text{C}$	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$	W
E_{AS}	Avalanche Energy, Single pulse	1345	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.61	$^\circ\text{C/W}$

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 1in^2 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	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	---	4.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=30A$	---	2.7	3.2	$m\Omega$
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Freq.=1MHz	---	7910	---	pF
C_{oss}	Output Capacitance		---	887	---	
C_{rss}	Reverse Transfer Capacitance		---	30	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, V_{GS}=10V,$ $R_G=1.6\Omega, I_D=20A$	---	25	---	nS
T_r	Turn-on Rise Time		---	15	---	
$T_{d(off)}$	Turn-off Delay Time		---	52	---	
T_f	Turn-off Fall Time		---	17	---	
Q_g	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V,$ $I_D=20A$	---	127	---	nC
Q_{gs}	Gate-Source Charge		---	41	---	
Q_{gd}	Gate-Drain Charge		---	35	---	
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	$I_F=20A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	74	---	nS
Q_{rr}	Reverse Recovery Charge		---	165	---	nC

Note ④ : Pulse test (pulse width \leq 300us, duty cycles \leq 2%).

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



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Typical Characteristics

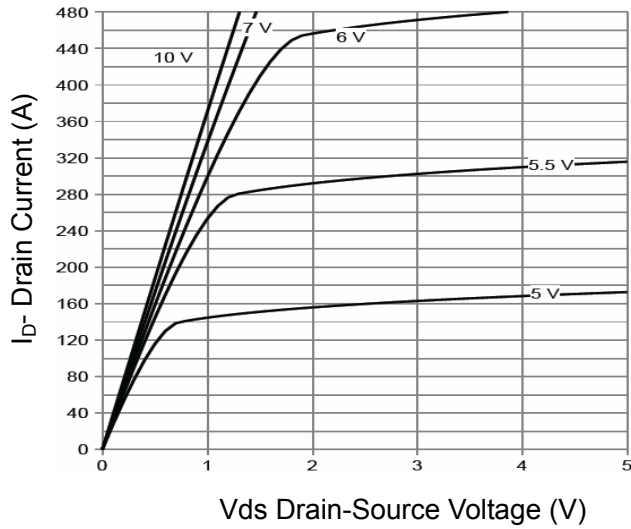


Figure 1 Output Characteristics

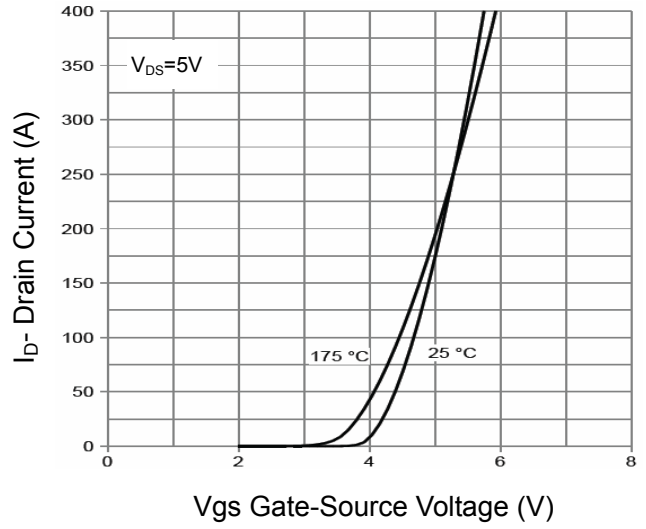


Figure 2 Transfer Characteristics

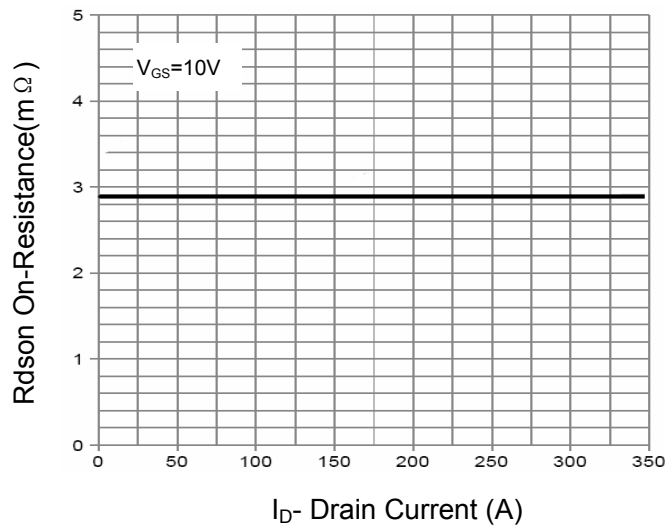


Figure 3 Rdson- Drain Current

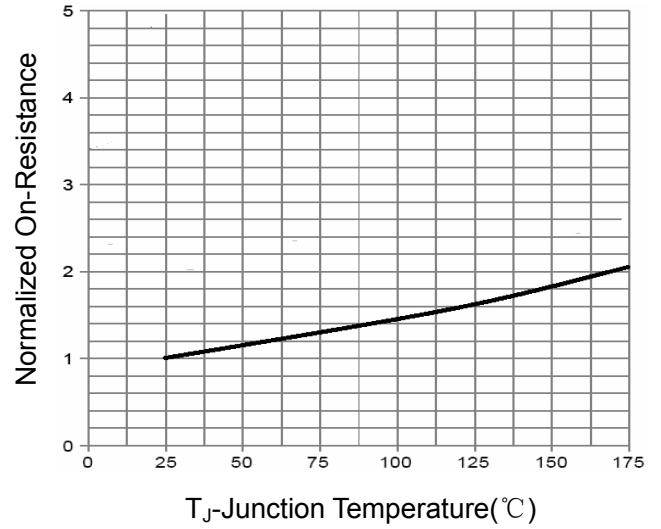


Figure 4 Rdson-Junction Temperature

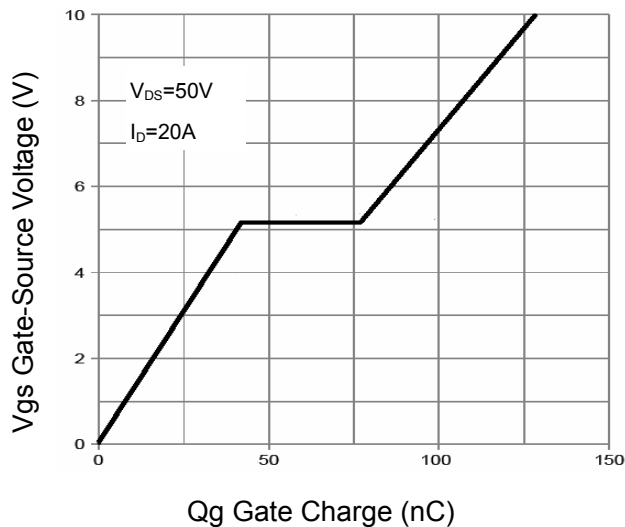


Figure 5 Gate Charge

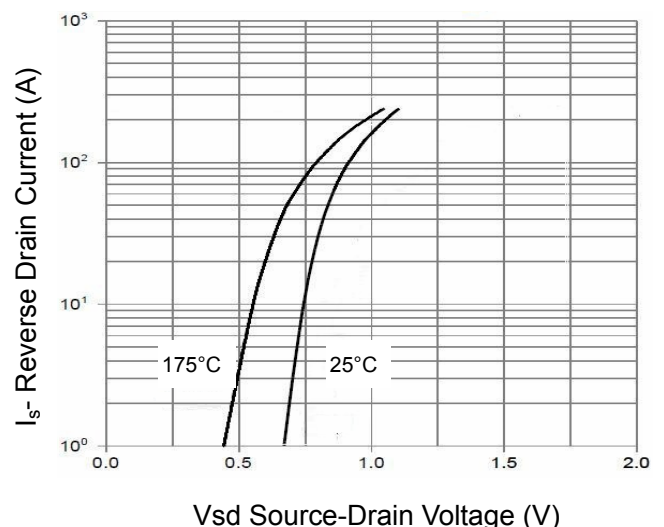


Figure 6 Source- Drain Diode Forward

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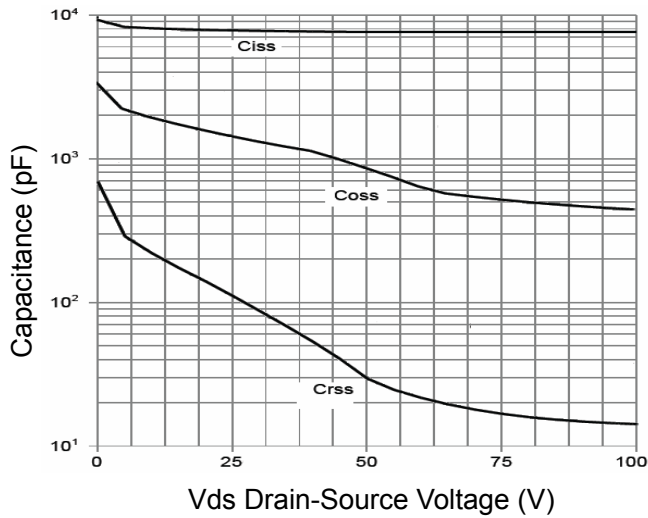


Figure 7 Capacitance vs Vds

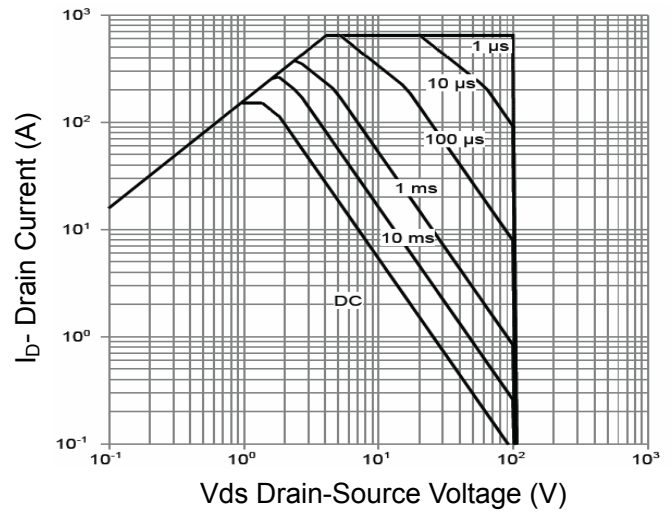


Figure 8 Safe Operation Area

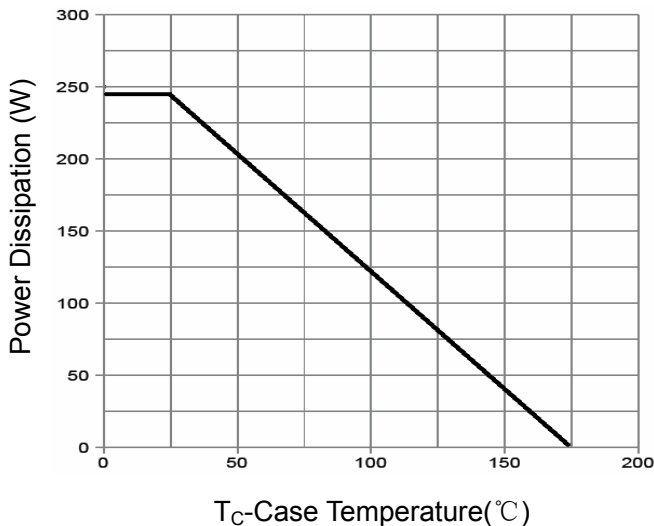


Figure 9 Power De-rating

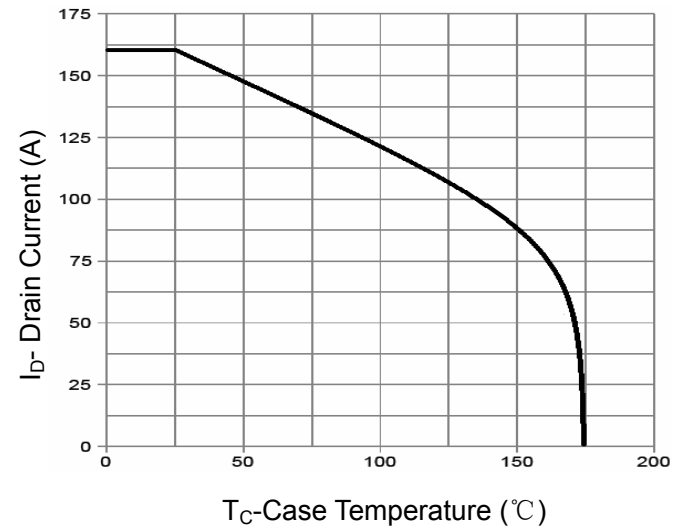


Figure 10 Current De-rating

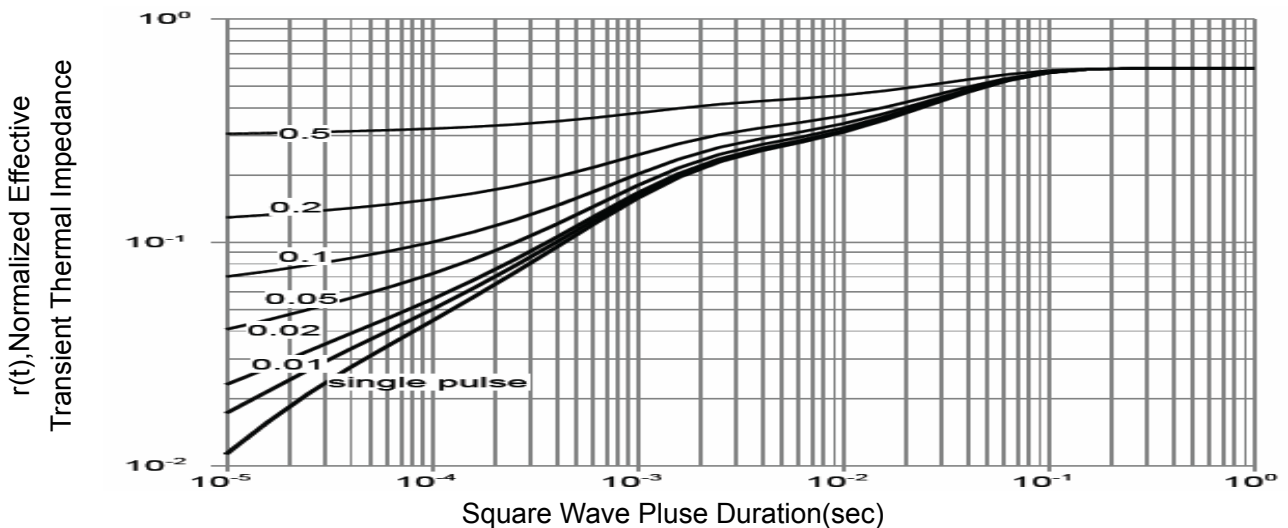


Figure 11 Normalized Maximum Transient Thermal Impedance

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TO-263 Package Outline Data

