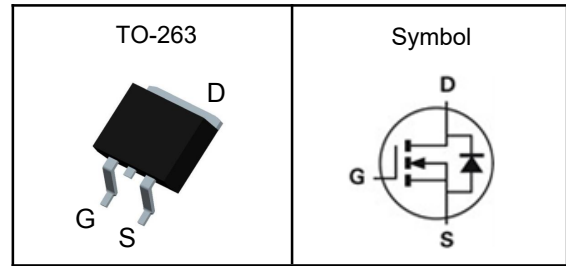


N-Channel Enhancement Mode MOSFET
Features

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

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description


V_{DSS}	100	V
$R_{DS(ON)-Typ}$	2.1	m Ω
I_D	176	A

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

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	100	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	1150	mJ
$I_{DM}^{①}$	300 μs Pulse Drain Current Tested	704	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 176	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 300	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ₁ (Max)	40	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ₁	0.6	$^\circ\text{C/W}$

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

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

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



N-Channel Enhancement Mode MOSFET

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	$V_{GS}=0V, I_D=250mA$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	---	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	$V_{GS}=10V, I_D=100A$	---	2.1	2.6	$m\Omega$
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Freq.=1MHz	---	12000	---	pF
C_{oss}	Output Capacitance		---	1800	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, V_{GS}=10V,$ $R_G=5.1\Omega, I_D=100A$	---	42	---	nS
T_r	Turn-on Rise Time		---	38	---	
$T_{d(off)}$	Turn-off Delay Time		---	90	---	
T_f	Turn-off Fall Time		---	30	---	
Q_g	Total Gate Charge	$V_{DD}=50V, V_{GS}=10V,$ $I_D=100A$	---	170	---	nC
Q_{gs}	Gate-Source Charge		---	60	---	
Q_{gd}	Gate-Drain Charge		---	40	---	
Source-Drain Characteristics ($T_J=25^{\circ}\text{C}$)						
V_{SD} ^④	Diode Forward Voltage	$I_S=100A, V_{GS}=0V$	---	0.8	1.1	V
t_{rr}	Reverse Recovery Time	$V_R=50V, I_F=100A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	100	---	nS
Q_{rr}	Reverse Recovery Charge		---	300	---	nC

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

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

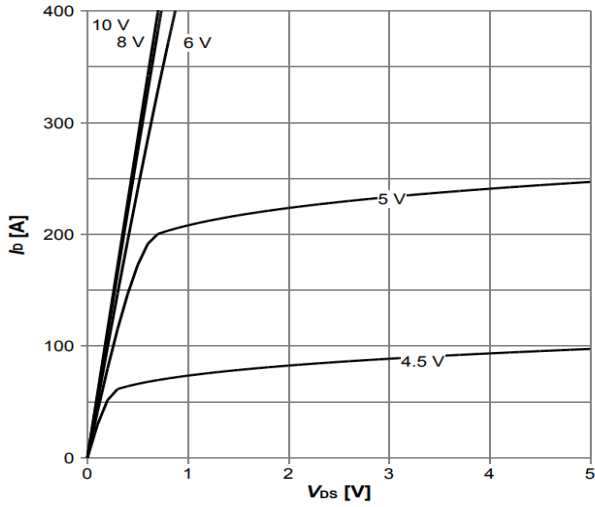
N-Channel Enhancement Mode MOSFET
Typical Characteristics


Figure 1: Typ. Output Characteristics

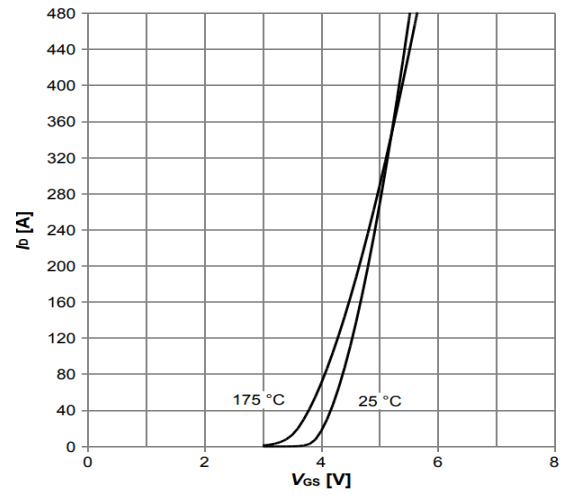


Figure 2: Typ. Transfer Characteristics

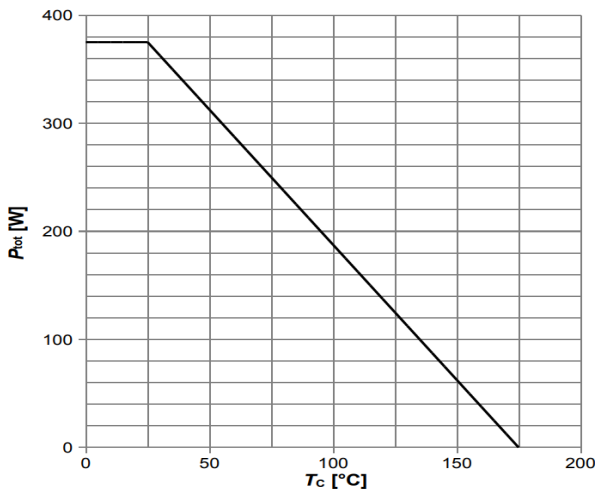


Figure 3: Power Dissipation

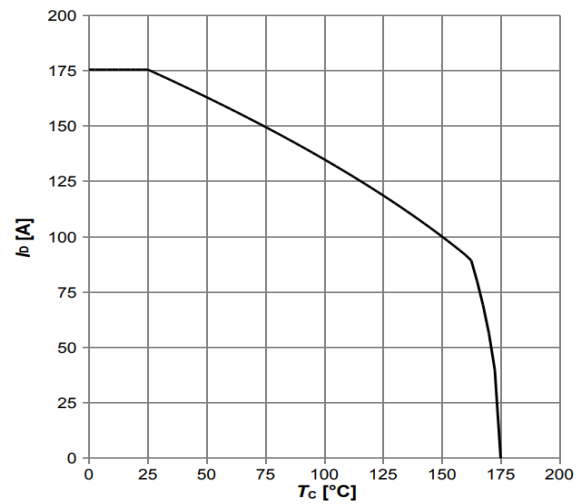


Figure 4: Drain Current vs. Temperature

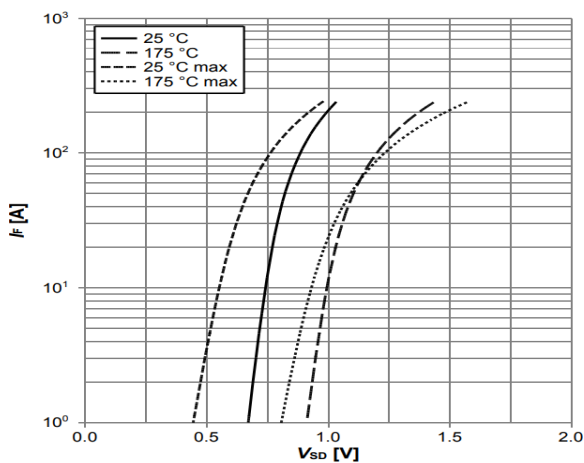


Figure 5: Forward Characteristics of Reverse Diode

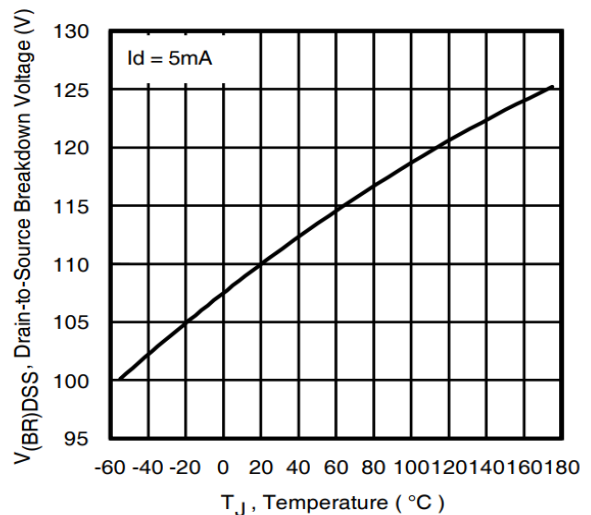


Figure 6: Drain-Source Breakdown Voltage

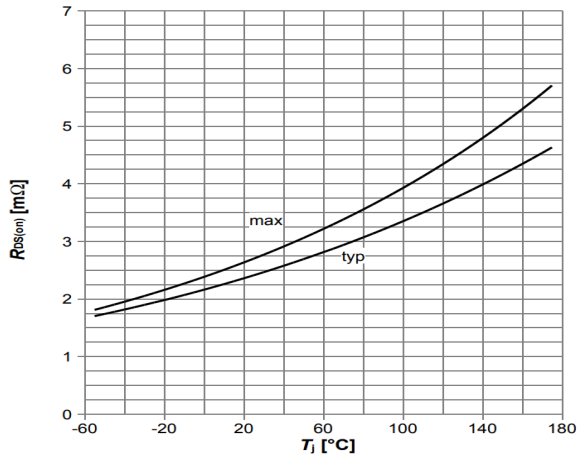
N-Channel Enhancement Mode MOSFET


Figure 7: Typ. Drain-Source On-State Resistance

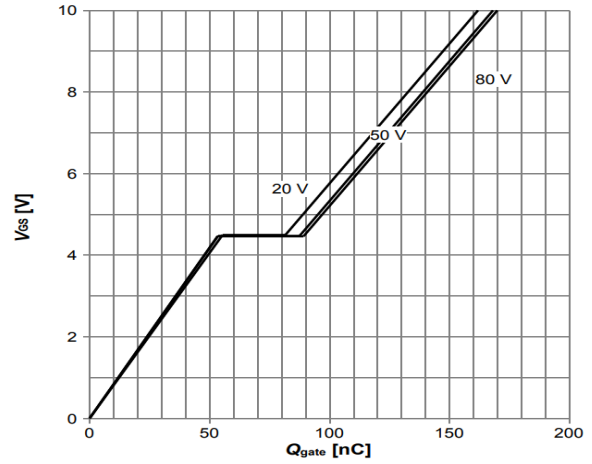


Figure 8: Typ. Gate Charge

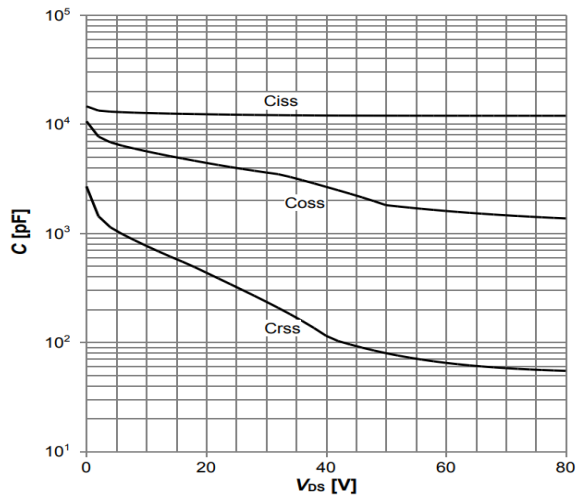


Figure 9: Typ. Capacitances

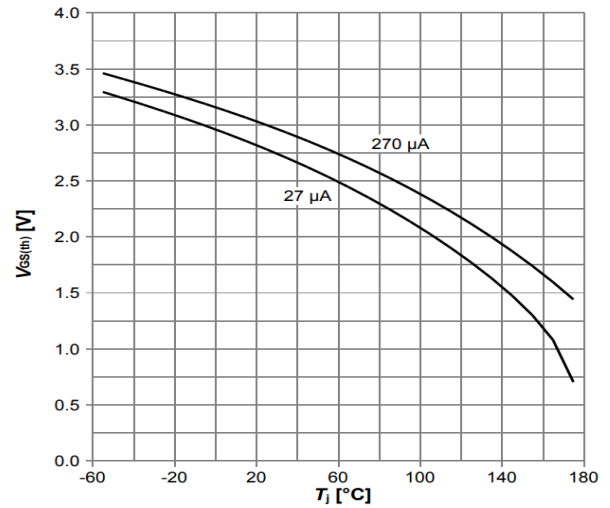


Figure 10: Typ. Gate threshold voltage

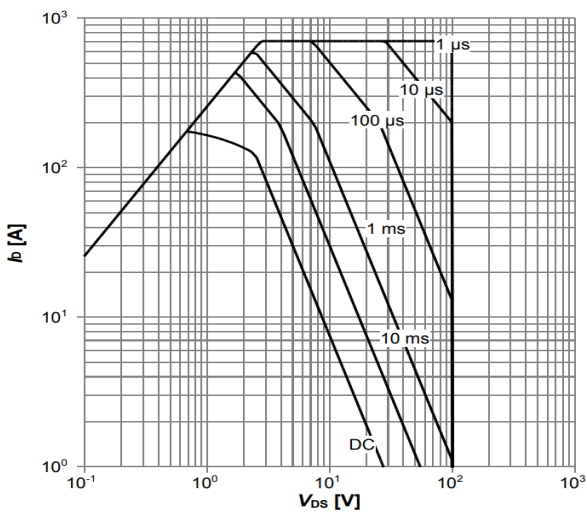


Figure 11: Max. Forward Safe Operating Area

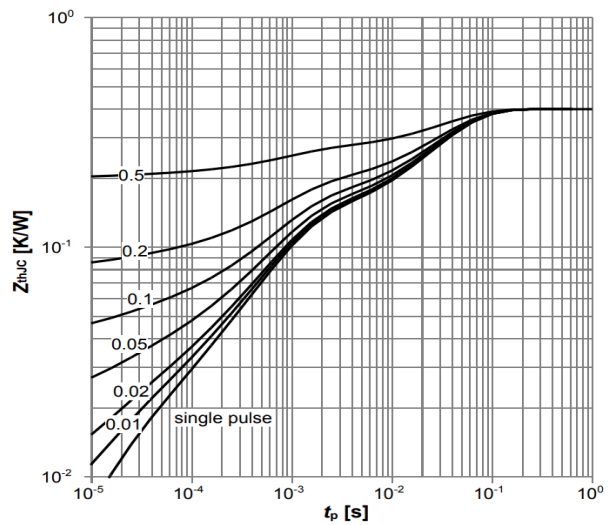


Figure 12: Max. Transient Thermal Impedance

N-Channel Enhancement Mode MOSFET
TO-263 Package Outline Data
