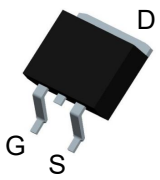
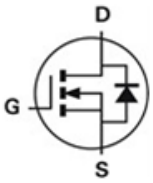
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

TO-263	Symbol
	

Applications

- High Frequency Point-of-Load Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch

V_{DSS}	60	V
$R_{DS(ON)-Typ}$	2.8	mΩ
I_D	150	A

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

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM} ①	Pulse Drain Current Tested	600	A
I_D	Continuous Drain Current	150	A
P_D	Maximum Power Dissipation	220	W
E_{AS}	Avalanche Energy, Single pulse	465	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.68	℃/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.

N-Channel Enhancement Mode MOSFET

Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

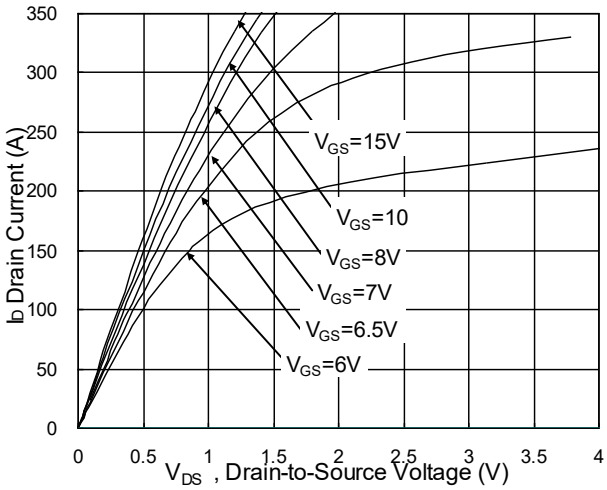
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	2.0	---	4.0	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=40A	---	2.8	3.5	mΩ
		V_{GS}=4.5V, I_D=20A	---	3.6	4.5	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Freq.=1MHz	---	5700	---	pF
C_{oss}	Output Capacitance		---	920	---	
C_{rss}	Reverse Transfer Capacitance		---	400	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=30V , V_{GS}=10V , R_G=2.7Ω, I_D=40A	---	21	---	nS
T_r	Turn-on Rise Time		---	95	---	
$T_{d(off)}$	Turn-off Delay Time		---	65	---	
T_f	Turn-off Fall Time		---	84	---	
Q_g	Total Gate Charge	V_{GS}=10V,V_{DS}=30V, I_D=40A	---	139	---	nC
Q_{gs}	Gate-Source Charge		---	30	---	
Q_{gd}	Gate-Drain Charge		---	57	---	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	I_S=40A, V_{GS}=0V	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=40A, dI_F/dt=100A/μs	---	54	---	nS
Q_{rr}	Reverse Recovery Charge		---	82	---	nC

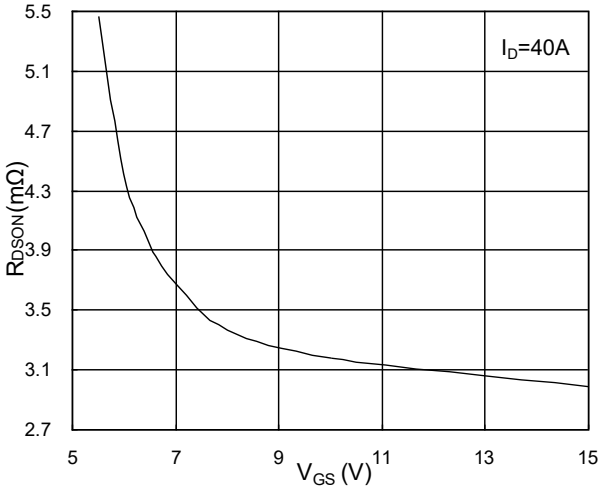
Note ④: Pulse test (pulse width≤300us, duty cycle≤2%).

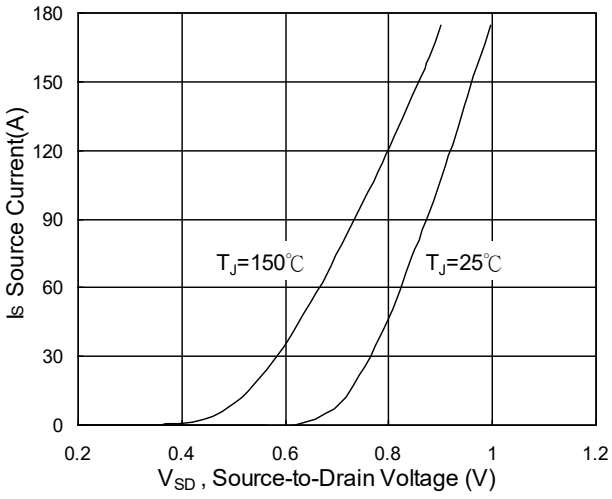
Note ⑤ : Guaranteed by design, not subject to production testing.

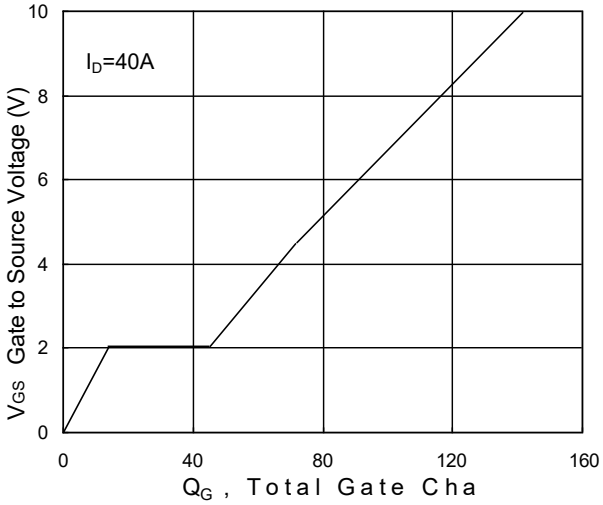
N-Channel Enhancement Mode MOSFET

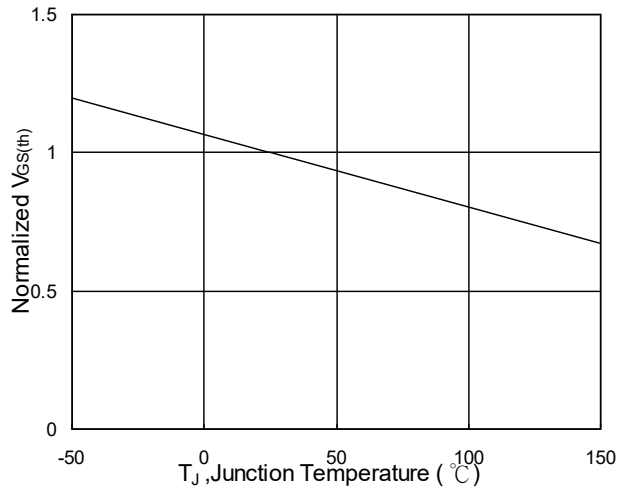
Typical Characteristics

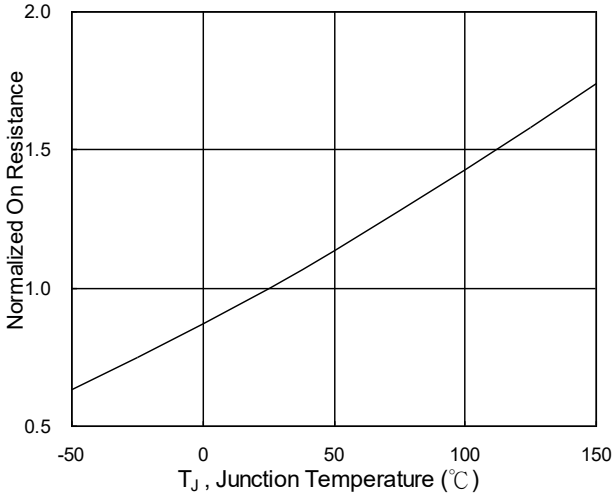




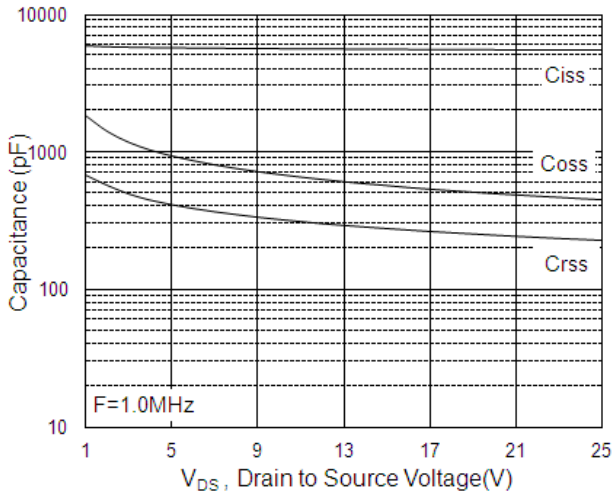


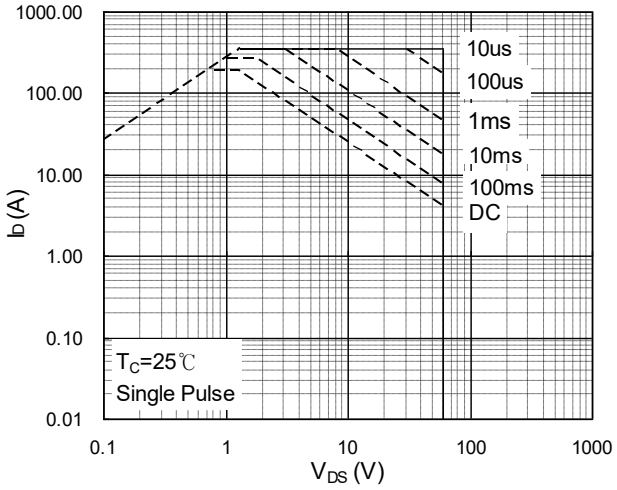


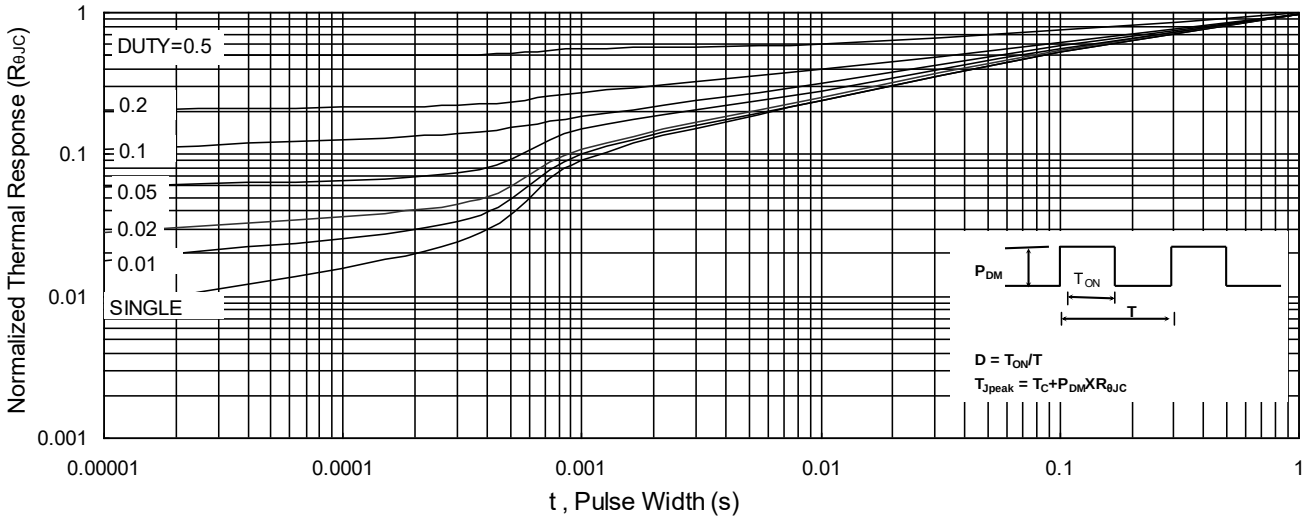


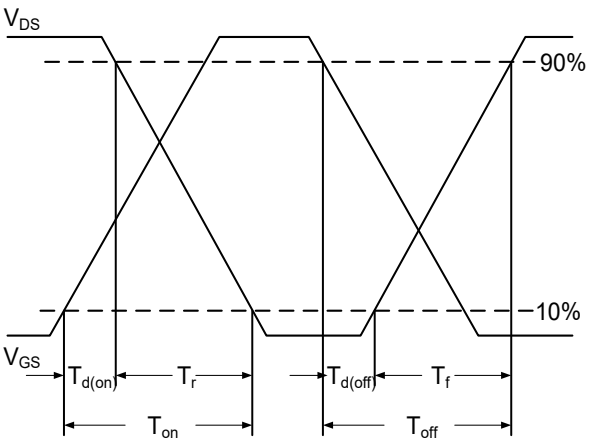


N-Channel Enhancement Mode MOSFET

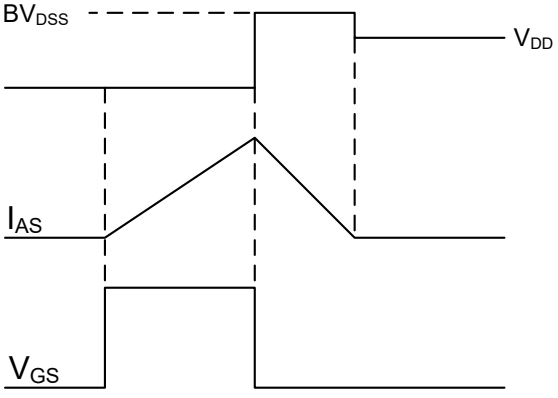








$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS}-V_{DD}}$$



TO-263 Package Outline Data