

N-Channel Enhancement Mode MOSFET

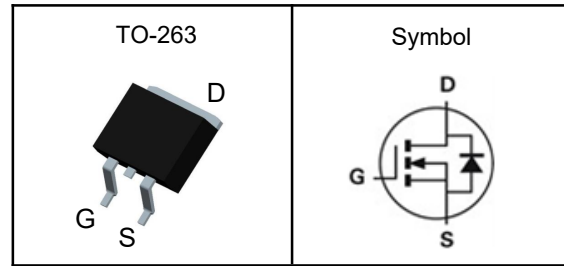
Features

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

Applications

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

Pin Description



V_{DSS}	40	V
$R_{DS(ON)-Typ}$	1.4	m Ω
I_D	180	A

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

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	40	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	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	720	A
I_D	Continuous Drain Current	180	A
P_D	Maximum Power Dissipation	250	W
E_{AS}	Avalanche Energy, Single pulse	1512	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	42	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.5	$^\circ\text{C}/\text{W}$

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

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

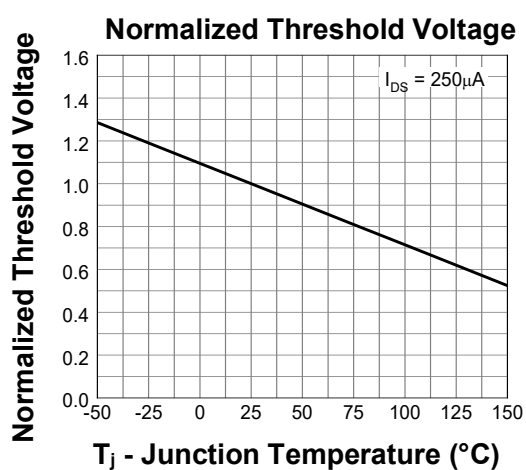
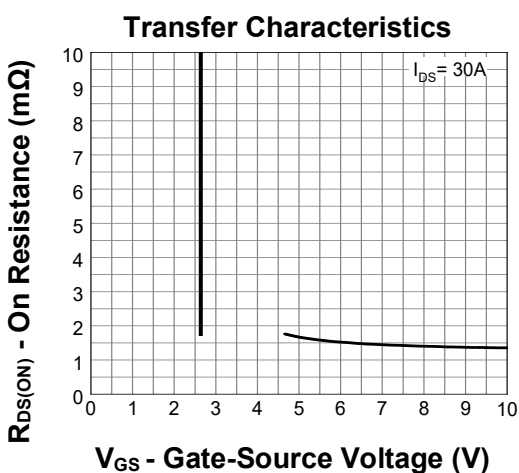
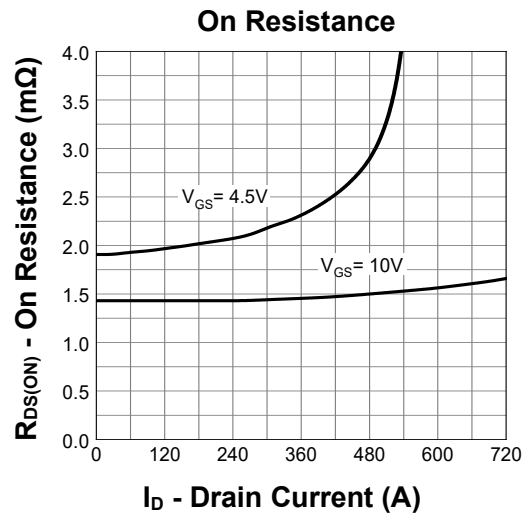
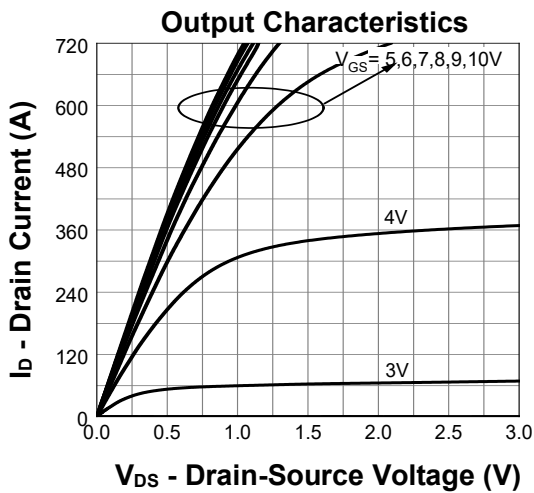
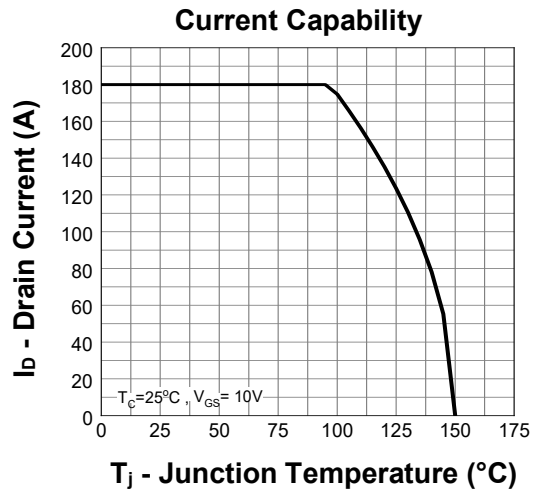
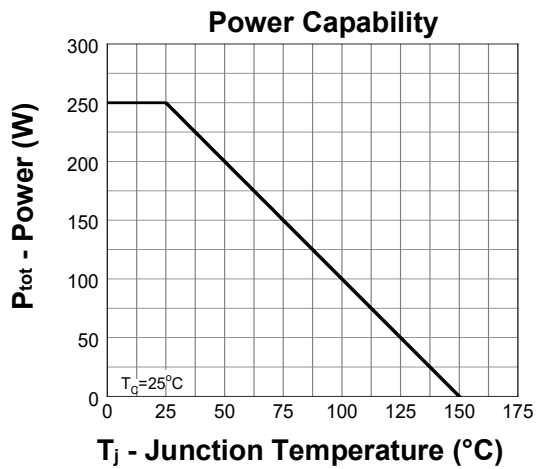
Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

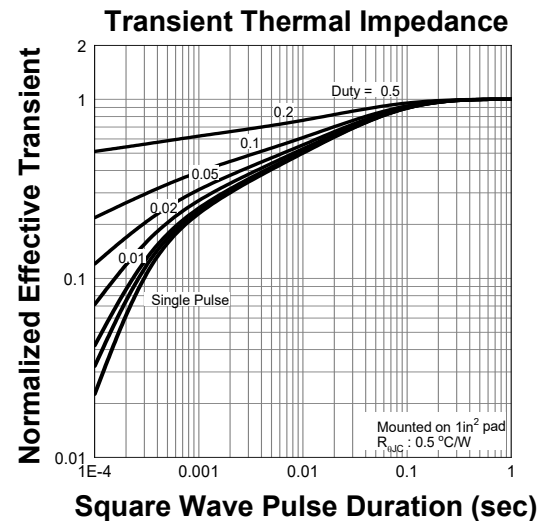
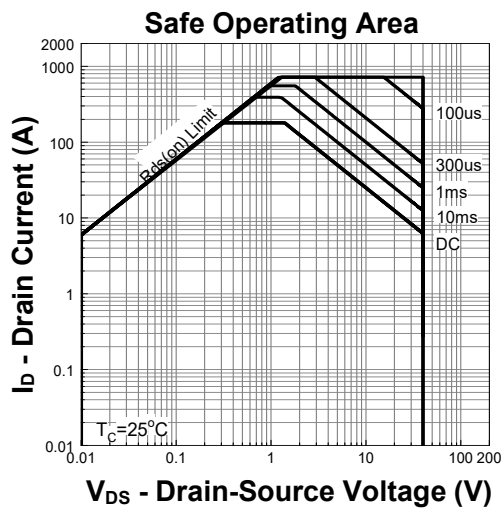
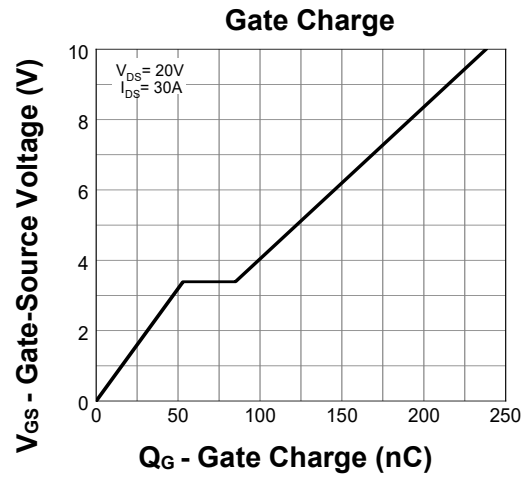
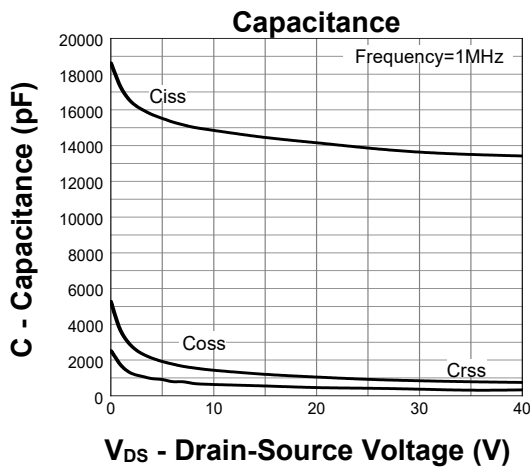
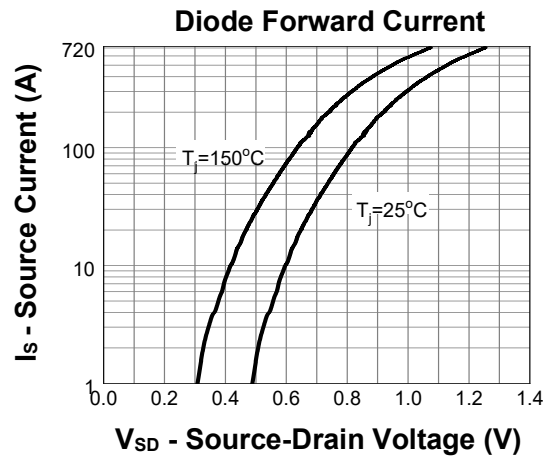
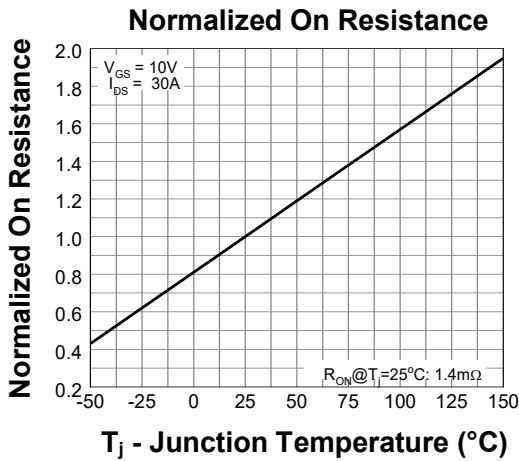
**N-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=32V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	---	2.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=30A$	---	1.4	1.6	$m\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	1.8	2.2	$m\Omega$
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=20V, \text{Freq.}=1\text{MHz}$	---	14308	---	pF
C_{oss}	Output Capacitance		---	1036	---	
C_{rss}	Reverse Transfer Capacitance		---	308	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=20V, V_{GS}=10V, R_G=3.9\Omega, I_D=30A$	---	25	---	nS
T_r	Turn-on Rise Time		---	110	---	
$T_{d(off)}$	Turn-off Delay Time		---	190	---	
T_f	Turn-off Fall Time		---	126	---	
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V, I_D=30A$	---	238	---	nC
Q_{gs}	Gate-Source Charge		---	53	---	
Q_{gd}	Gate-Drain Charge		---	32	---	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	$I_S=30A, V_{GS}=0V$	---	---	1.3	V
t_{rr}	Reverse Recovery Time	$I_F=30A, di_F/dt=100A/\mu s$	---	34	---	nS
Q_{rr}	Reverse Recovery Charge		---	25	---	nC

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

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

N-Channel Enhancement Mode MOSFET
Typical Characteristics


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TO-263 Package Outline Data
