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

TO-263	Symbol
D G S	D G S
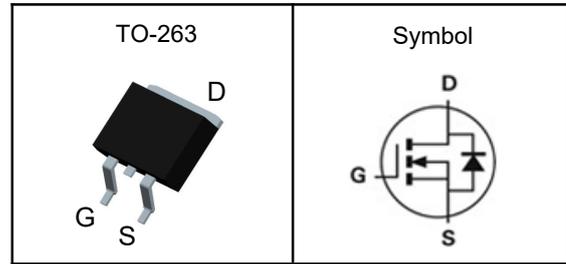
V_{DSS}	150	V
$R_{DS(ON)-Typ}$	5	mΩ
I_D	135	A

Absolute Maximum Ratings(T$_J$=25℃, Unless Otherwise Noted)

Symbol	Parameter		N-Channel	Unit
V_{DSS}	Drain-Source Voltage		150	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 175	℃
T_{STG}	Storage Temperature Range		-55 to 175	℃
I_{DM}[①]	Pulse Drain Current Tested	T_C=25°C	530	A
I_D	Continuous Drain Current	T_C=25°C	135	A
P_D	Maximum Power Dissipation	T_C=25°C	375	W
I_{AS}[②]	Avalanche Current, Single pulse	L=0.5mH	60	A
E_{AS}[②]	Avalanche Energy, Single pulse	L=0.5mH	540	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$[③]	Thermal Resistance-Junction to Ambient	55	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case	0.34	℃/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.

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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	150	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=150V, 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$_D$=20A	---	5	6.2	mΩ
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=75V, Freq.=1MHz	---	4300	---	pF
C$_{oss}$	Output Capacitance		---	530	---	pF
C$_{rss}$	Reverse Transfer Capacitance		---	7	---	pF
T$_{d(on)}$	Turn-on Delay Time	V$_{GS}$=10V,V$_{DD}$=75V, I$_D$=20A,R$_G$=6Ω	---	19	---	nS
T$_r$	Turn-on Rise Time		---	30	---	nS
T$_{d(off)}$	Turn-off Delay Time		---	53	---	nS
T$_f$	Turn-off Fall Time		---	40	---	nS
Q$_g$	Total Gate Charge	V$_{GS}$=10V,V$_{DD}$=75V, I$_D$=20A	---	68	---	nC
Q$_{gs}$	Gate-Source Charge		---	15	---	nC
Q$_{gd}$	Gate-Drain Charge		---	14	---	nC
Source-Drain Characteristics						
V$_{SD}$[4]	Diode Forward Voltage	I$_S$=15A, V$_{GS}$=0V	---	---	1.2	V
t$_{rr}$	Reverse Recovery Time	I$_F$=15A, V$_R$=75V dI$_F$/dt=100A/μs	---	100	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	150	---	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
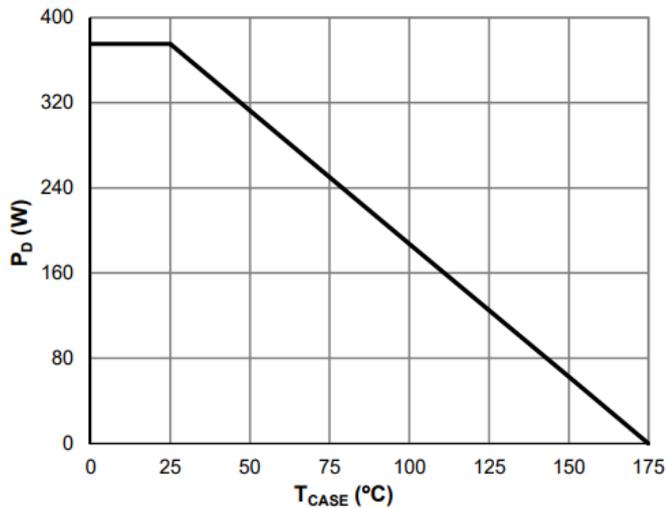
Diagram 1: Power dissipation
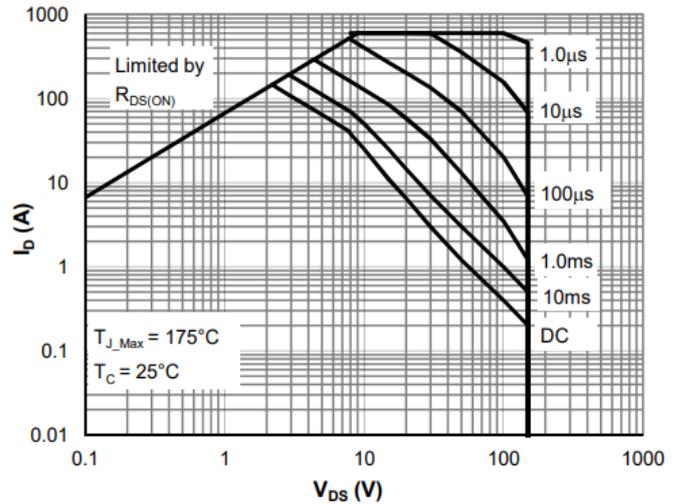
Diagram 2: Max. Safe Operating Area
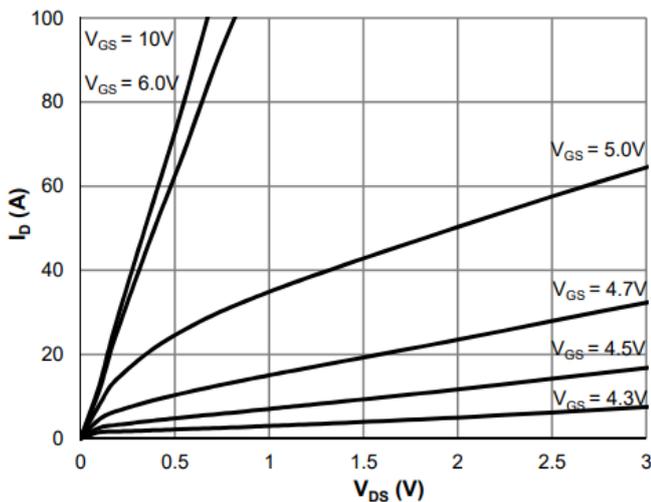
Diagram 3: Typ. output characteristics
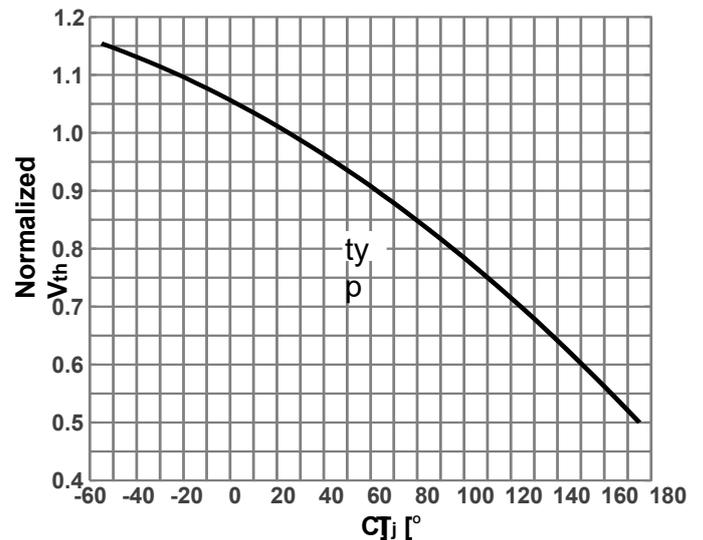
Diagram 4: Gate threshold voltage vs. Junction temperature
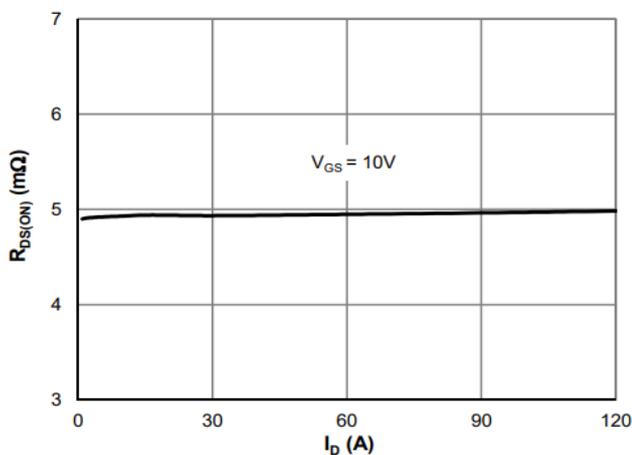
Diagram 5: On-state resistance vs. Drain current
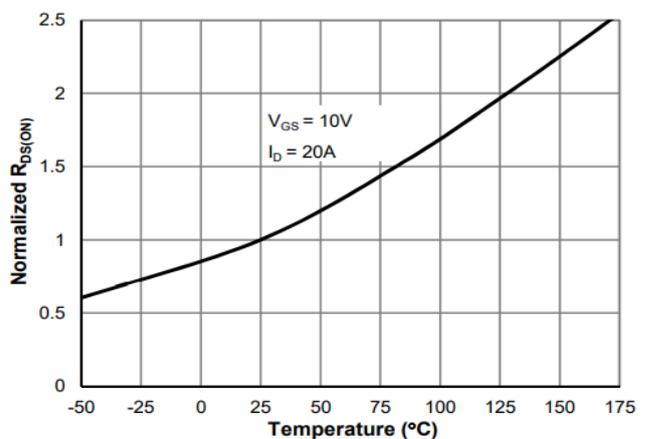
Diagram 6: On-state resistance vs. Junction temperature

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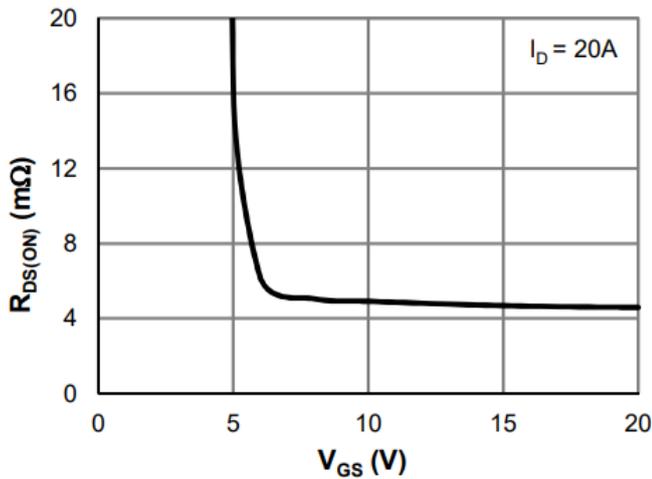
Diagram 7: On-state resistance vs. Vgs characteristics
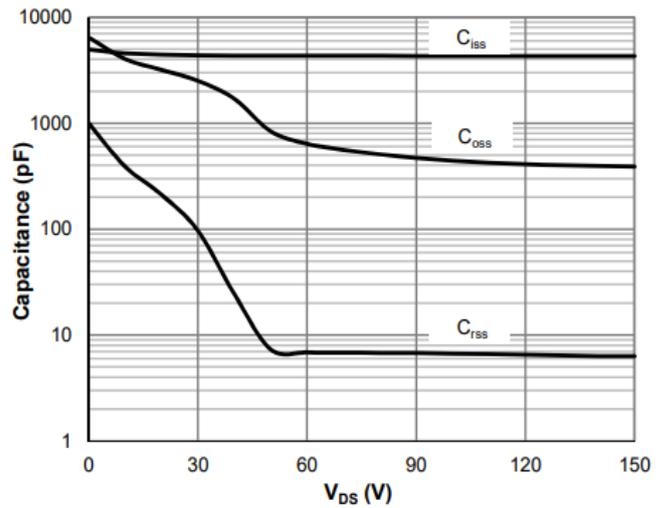
Diagram 8: Typ. capacitances
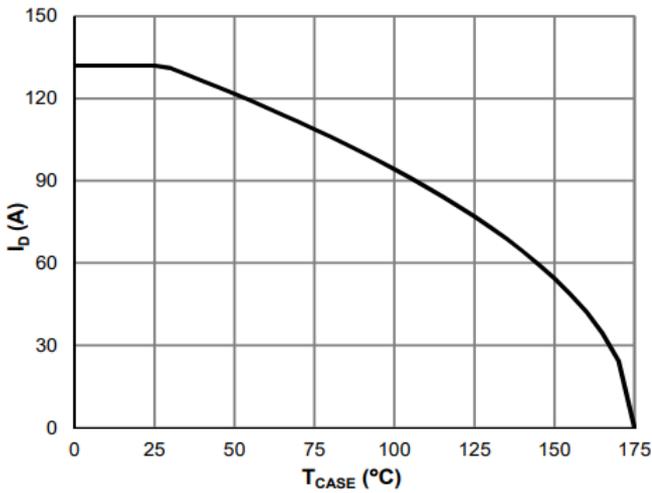
Diagram 9: Maximum Drain Current
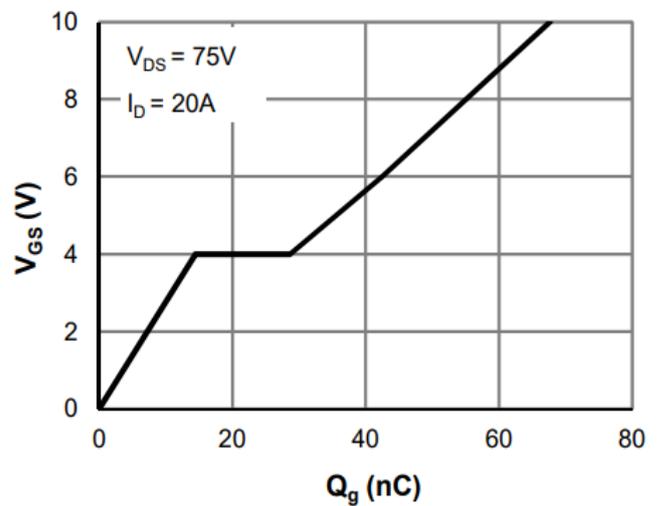
Diagram 10 Typ. gate charge
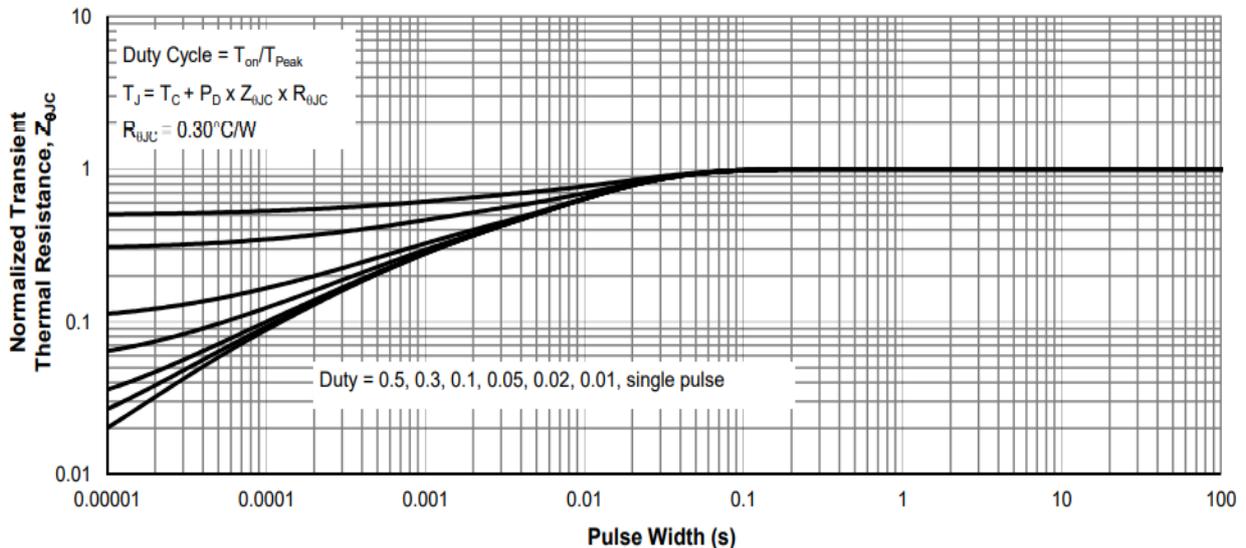
Diagram 11: Normalized Maximum Transient Thermal Impedance

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TO-263 Package Outline Data