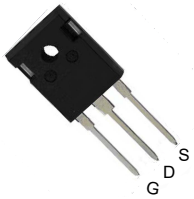
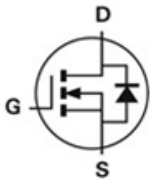
N-Channel Enhancement Mode MOSFET

Features

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

Pin Description

TO-247	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	150	V
$R_{DS(ON)-Typ}$	6.0	mΩ
I_D	140	A

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		150	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	T_C=25°C	500	A
I_D	Continuous Drain Current	T_C=25°C	140	A
P_D	Maximum Power Dissipation	T_C=25°C	210	W
I_{AS} ②	Avalanche Current, Single pulse	L=0.5mH	45	A
E_{AS} ②	Avalanche Energy, Single pulse	L=0.5mH	506	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	60	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.5	℃/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}=80V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	2	---	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	---	6.0	7.2	mΩ
		V_{GS}=6V, I_D=10A	---	7.2	10	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=75V, Freq.=1MHz	---	5200	---	pF
C_{oss}	Output Capacitance		---	410	---	
C_{rss}	Reverse Transfer Capacitance		---	10	---	
$T_{d(on)}$	Turn-on Delay Time	V_{GS}=10V,V_{DD}=75V, I_D=100A,R_G=1.6Ω	---	22	---	nS
T_r	Turn-on Rise Time		---	110	---	
$T_{d(off)}$	Turn-off Delay Time		---	44	---	
T_f	Turn-off Fall Time		---	100	---	
Q_g	Total Gate Charge	V_{GS}=10V,V_{DD}=75V, I_D=20A	---	72	---	nC
Q_{gs}	Gate-Source Charge		---	18	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	I_S=10A, V_{GS}=0V	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=100A, V_R=75V dI$_F$/dt=100A/μs	---	45	---	nS
Q_{rr}	Reverse Recovery Charge		---	12	---	nC

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

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

Typical Characteristics

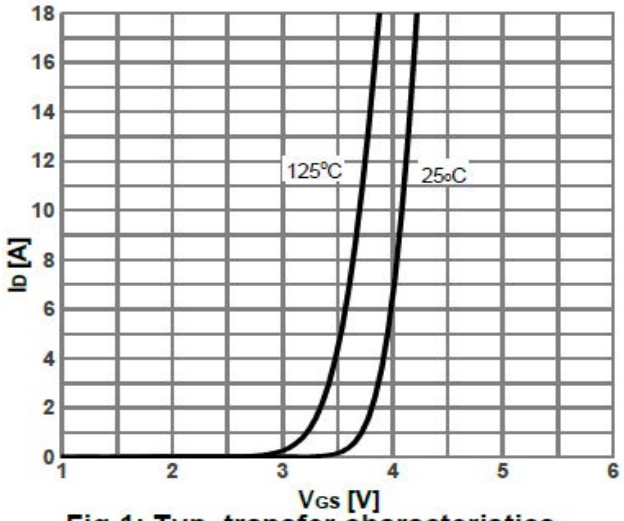

Fig 1: Typ. transfer characteristics

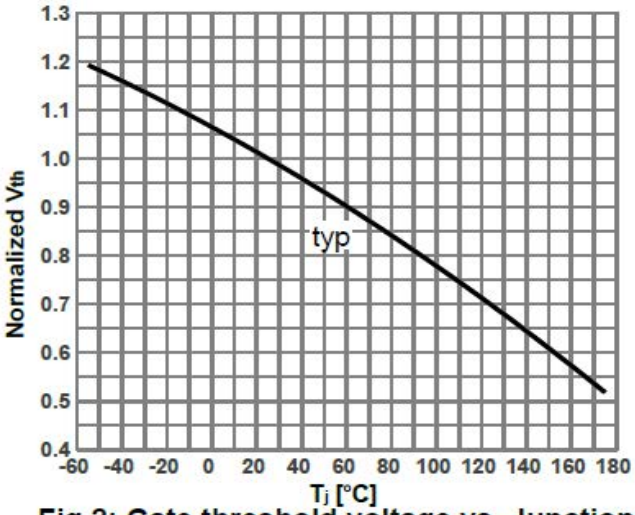

Fig 2: Gate threshold voltage vs. Junction temperature

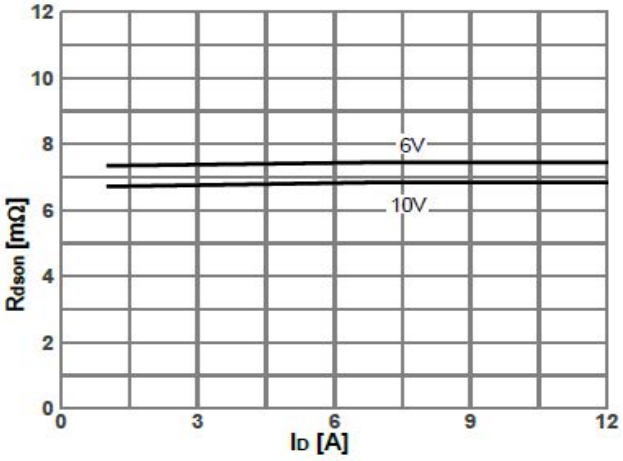

Fig 3: On-state resistance vs. Drain current

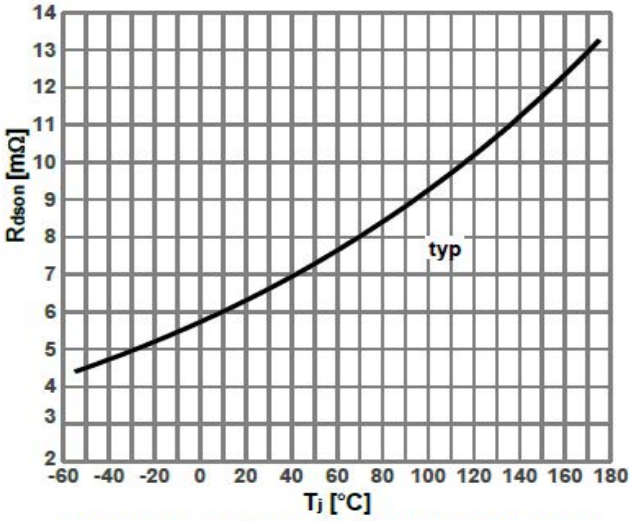

Fig 4: On-state resistance vs. Junction temperature

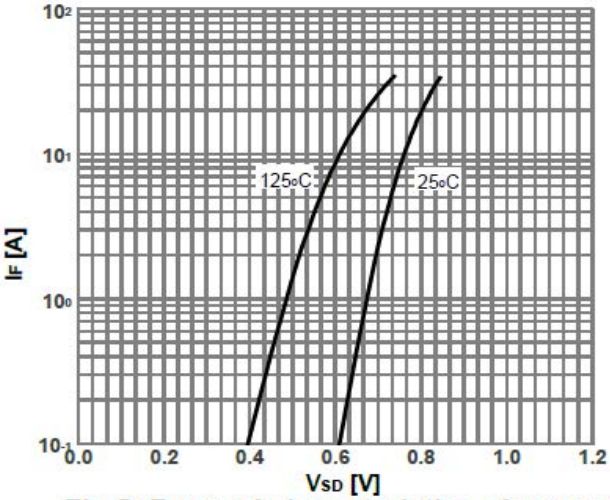

Fig 5: Forward characteristics of reverse diode

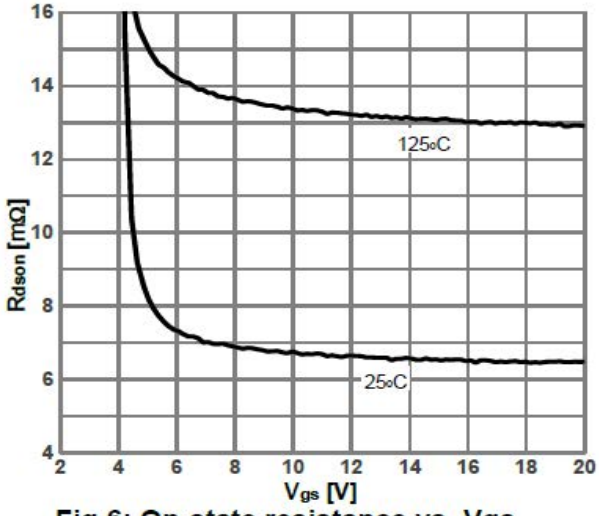

Fig 6: On-state resistance vs. Vgs characteristics

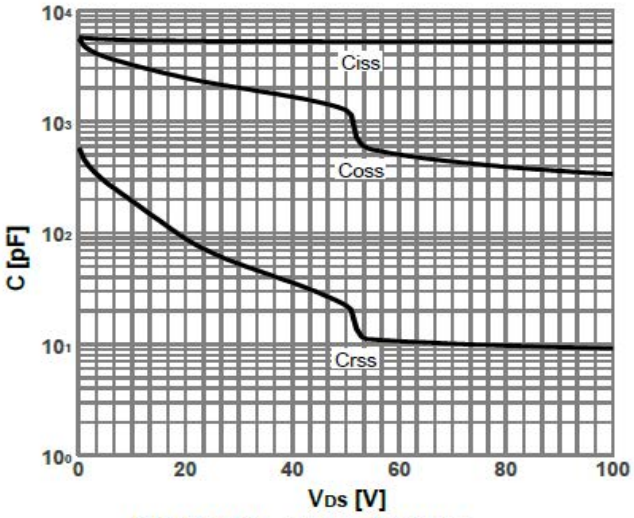

Fig 7: Typ. capacitances

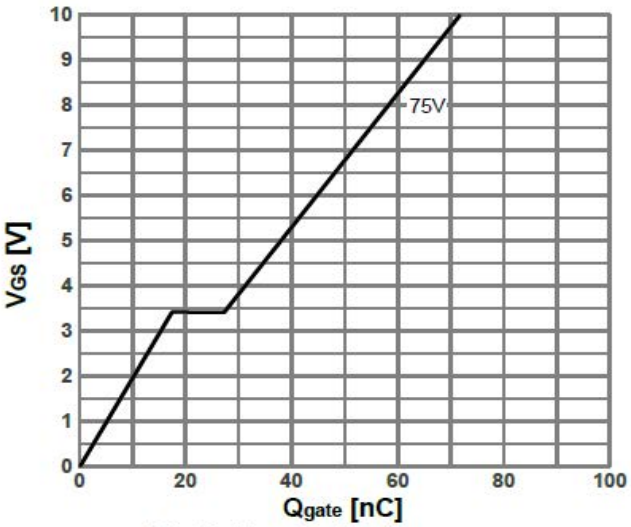

Fig 8: Typ. gate charge

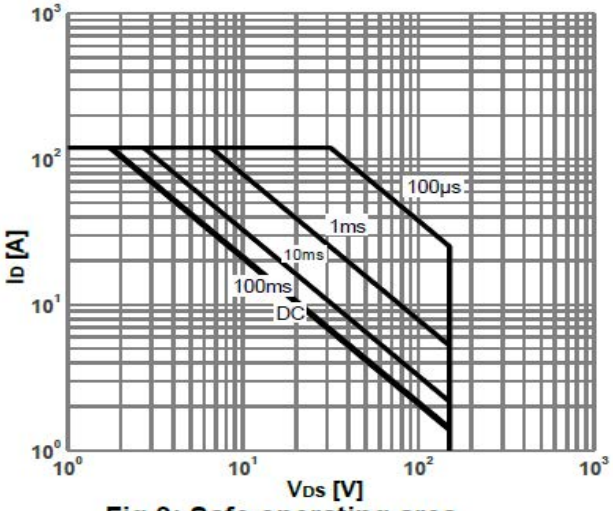

Fig 9: Safe operating area

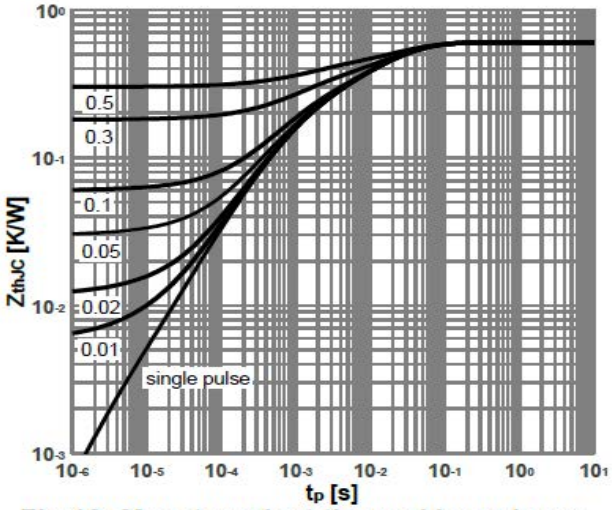

Fig 10: Max. transient thermal impedance

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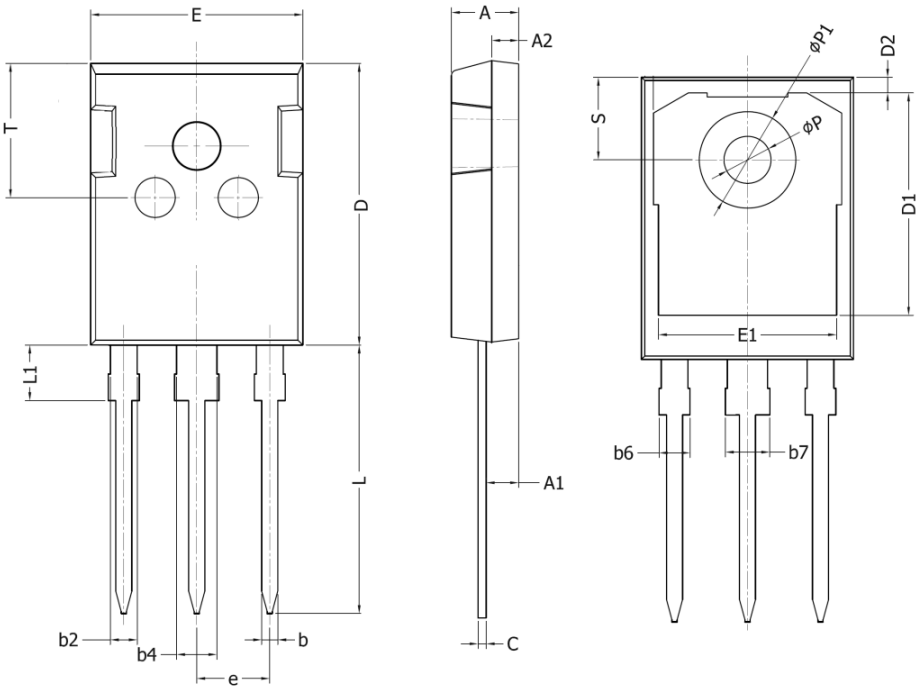
TO-247 Package Outline Dimensions



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	4.90	5.20
A1	2.31	2.51
A2	1.9	2.1
b	1.16	1.26
b2	1.96	2.06
b4	2.96	3.06
b6	-	2.25
b7	-	3.25
C	0.59	0.66
D	20.90	21.20
D1	16.25	16.85
D2	1.05	1.35
E	15.75	16.10
E1	13.00	13.60
e	5.436 BSC	
L	19.80	20.20
L1	-	4.30
P	3.40	3.60
P1	7.00	7.40
S	6.05	6.25
T	9.80	10.20