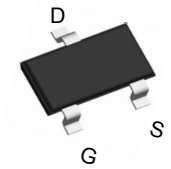
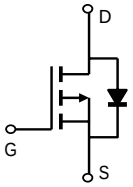
P-Channel Enhancement Mode MOSFET

Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

SOT23-3L	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	-20	V
$R_{DS(ON)-Typ}$	23	mΩ
I_D	-6	A

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

Symbol	Parameter		P-Channel	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	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_A=25°C	-24	A
I_D	Continuous Drain Current	T_A=25°C	-6	A
P_D	Maximum Power Dissipation	T_A=25°C	1.6	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient	100	℃/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 1in² 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	-20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	---	---	-1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-0.5	---	-1.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_D=-6A	---	23	29	mΩ
		V_{GS}=-2.5V, I_D=-3.7A	---	30	40	
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, Freq.=1MHz	---	1155	---	pF
C_{oss}	Output Capacitance		---	205	---	
C_{rss}	Reverse Transfer Capacitance		---	165	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=-10V ,I_D=-1A, V_{GEN}=-4.5V, R_G=6Ω, R_L=10Ω	---	7.7	---	nS
T_r	Turn-on Rise Time		---	13.8	---	
$T_{d(off)}$	Turn-off Delay Time		---	40	---	
T_f	Turn-off Fall Time		---	19	---	
Q_g	Total Gate Charge	V_{DS}=-10V , V_{GS}=-4.5V, I_D=-6A	---	13.3	---	nC
Q_{gs}	Gate-Source Charge		---	1.6	---	
Q_{gd}	Gate-Drain Charge		---	4.5	---	
Source-Drain Characteristics						
V_{SD}④	Diode Forward Voltage	I_S=-1A, V_{GS}=0V	---	-0.7	-1.0	V
t_{rr}	Reverse Recovery Time	I_{SD}=-6A dI$_{SD}$/dt =100A/μs	---	17	---	nS
Q_{rr}	Reverse Recovery Charge		---	8	---	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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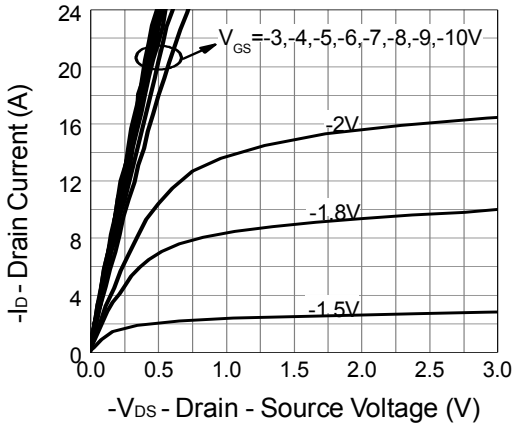
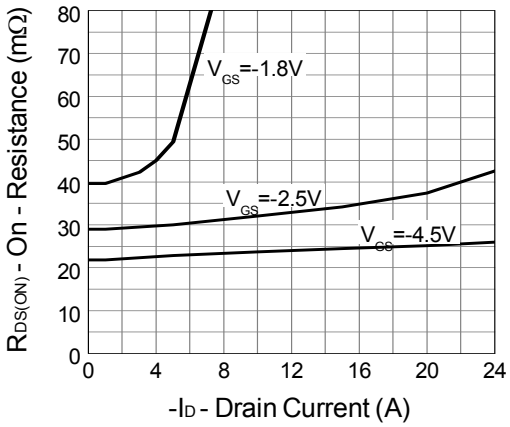
Typical Characteristics

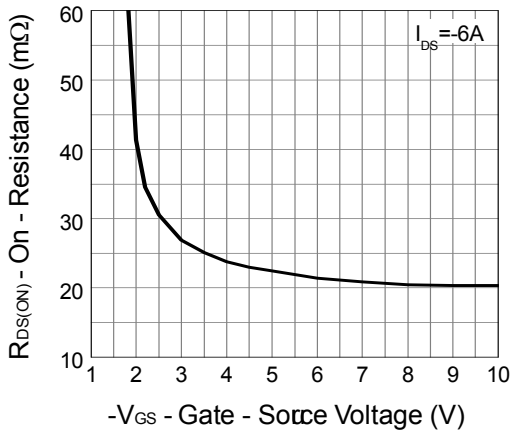
Output Characteristics



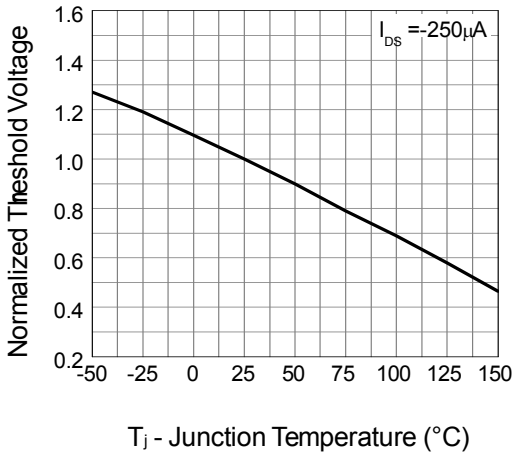
Drain-Source On Resistance



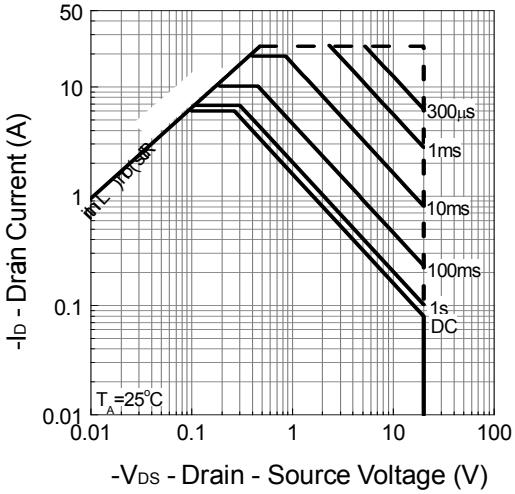
Gate-Source On Resistance



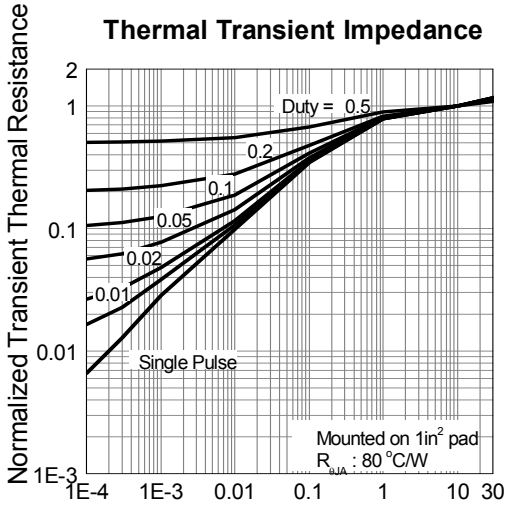
Gate Threshold Voltage



Safe Operation Area



Thermal Transient Impedance



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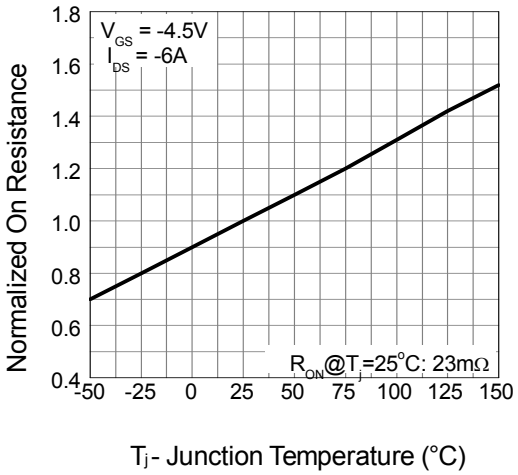
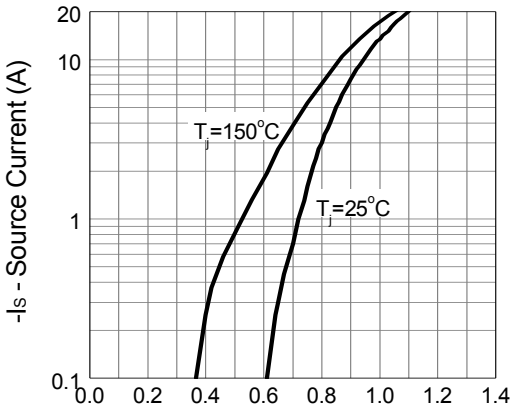
Drain-Source On Resistance



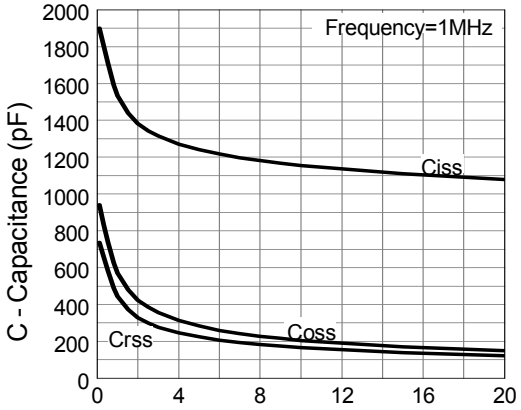
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



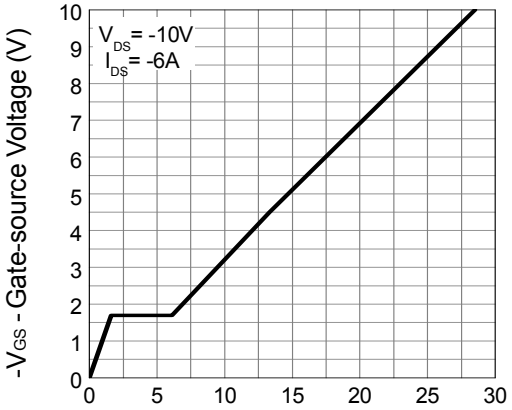
$-V_{SD}$ - Source - Drain Voltage (V)

Capacitance



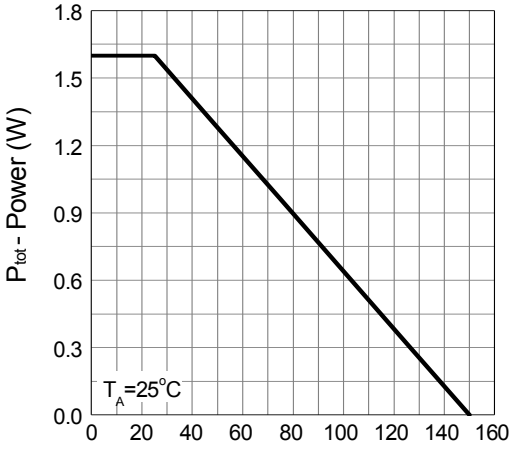
$-V_{DS}$ - Drain - Source Voltage (V)

Gate Charge



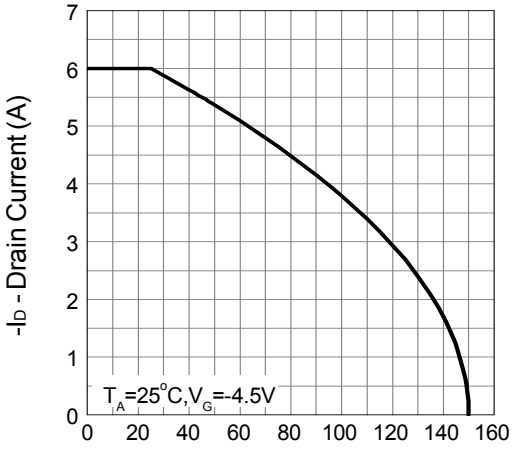
Q_G - Gate Charge (nC)

Power Dissipation



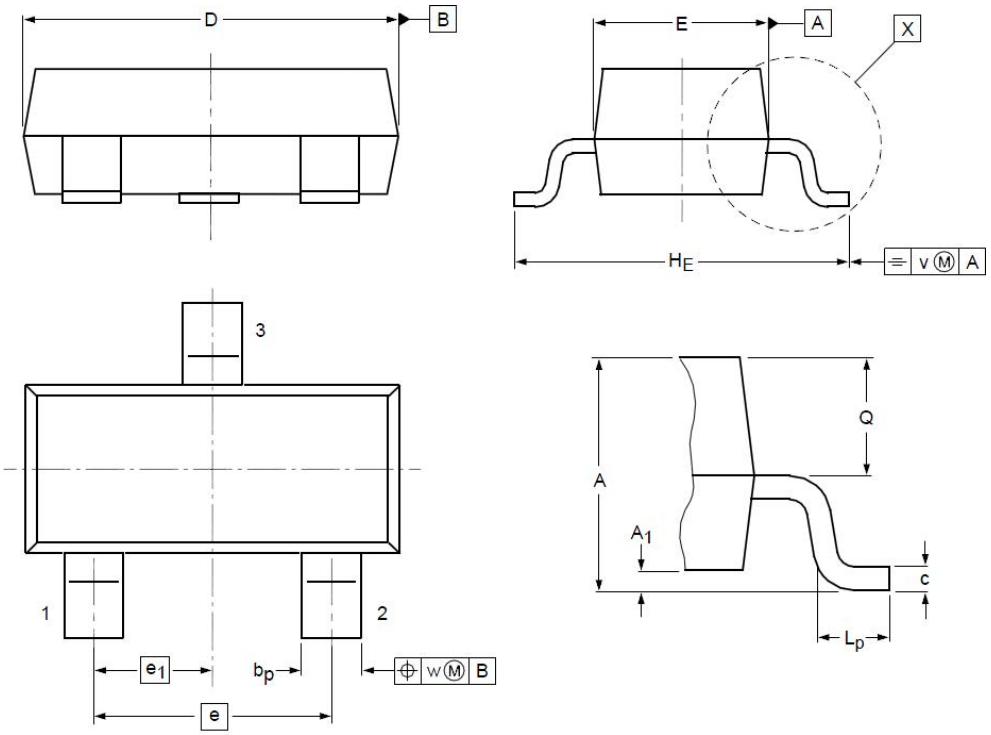
T_j - Junction Temperature (°C)

Drain Current



T_j - Junction Temperature (°C)

SOT23-3L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.07	1.25	**e_1**	--	0.95	--
A_1	0.01	0.05	0.10	**H_E**	2.50	2.80	3.00
b_p	0.30	0.40	0.50	**L_P**	0.30	0.45	0.60
c	0.10	0.15	0.20	**Q**	0.23	0.28	0.33
D	2.70	2.90	3.10	**V**	--	0.20	--
E	1.40	1.55	1.75	**W**	--	0.20	--
e	--	1.90	--				