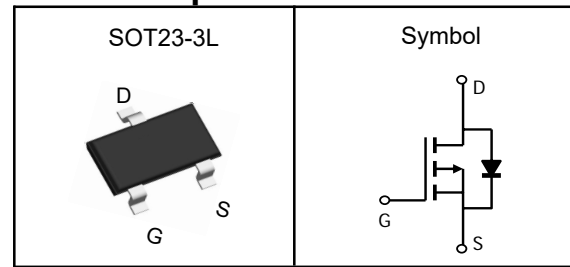


P-Channel Enhancement Mode MOSFET
Features

- Low $R_{ds(on)}$ for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description


V_{DSS}	-40	V
$R_{DS(ON)-Typ}$	45	m Ω
I_D	-3.2	A

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

Symbol	Parameter	P-Channel	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	-16.1	A
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$ -3.2	A
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 1	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	125	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case	80	$^\circ\text{C/W}$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C .

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.



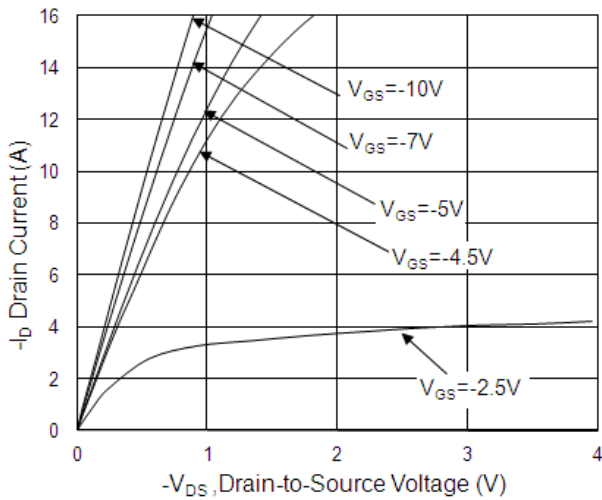
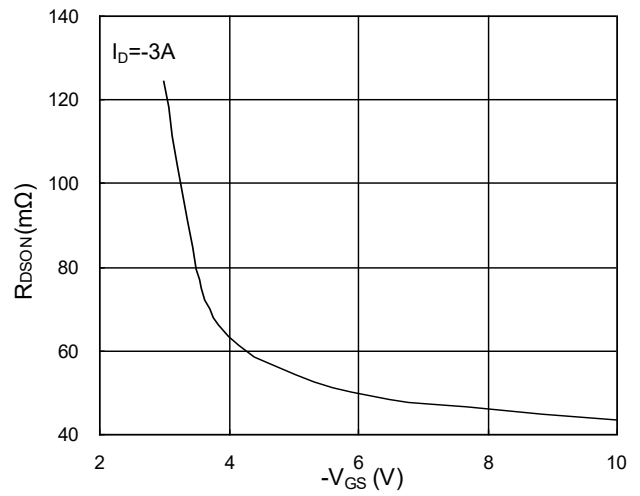
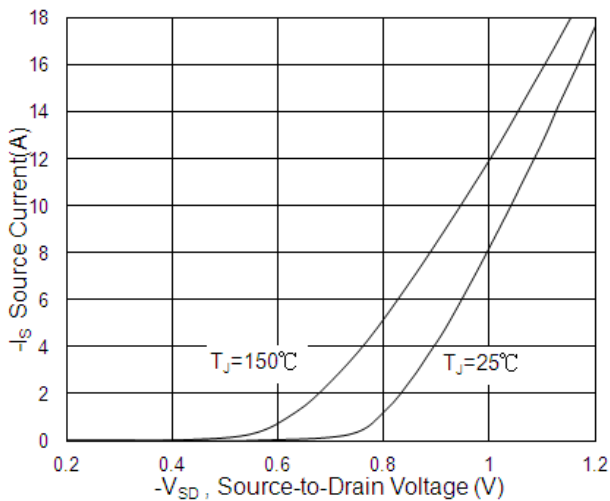
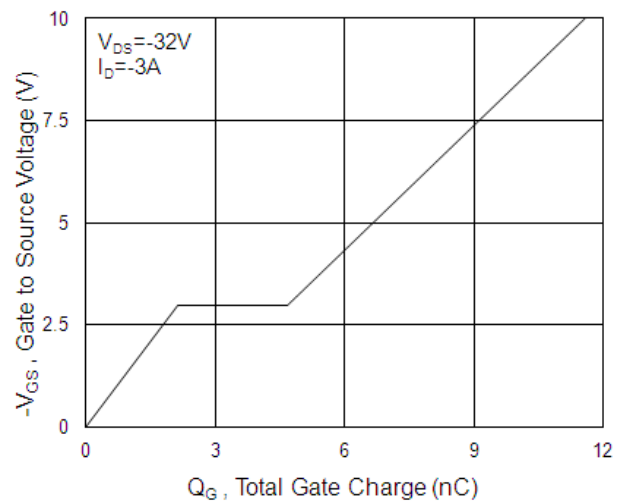
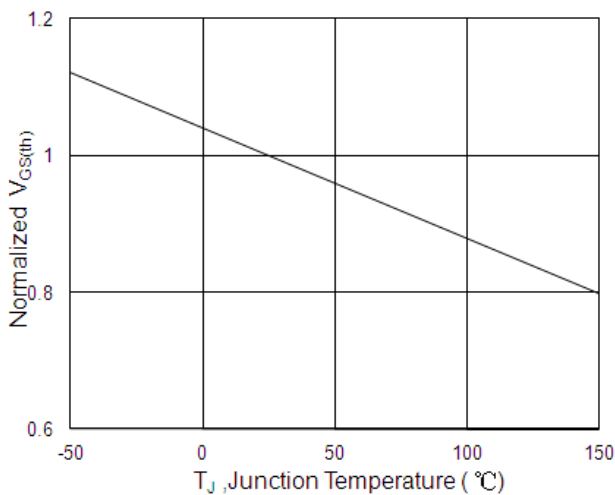
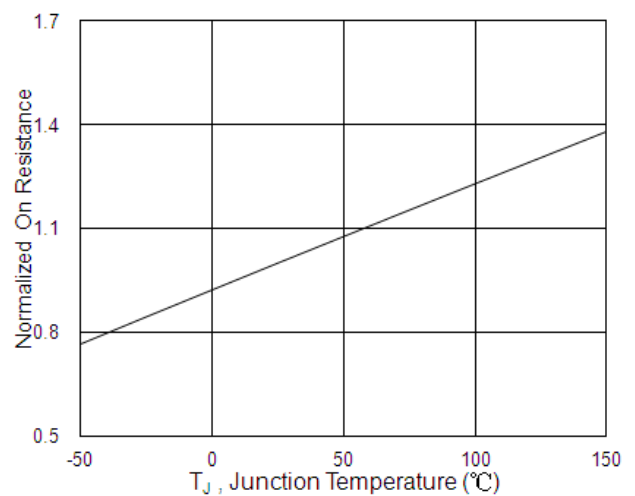
P-Channel Enhancement Mode MOSFET

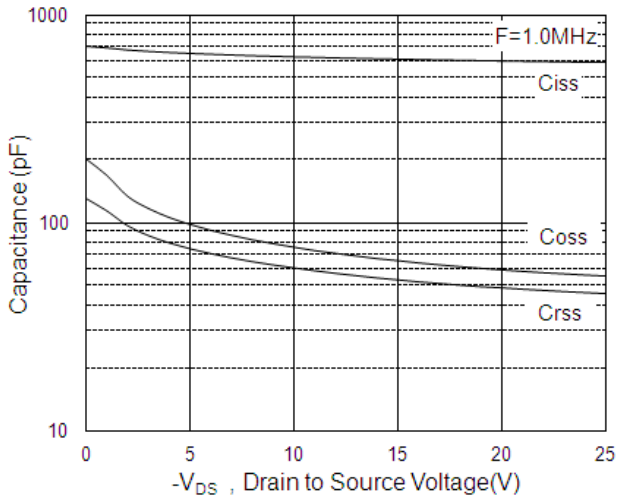
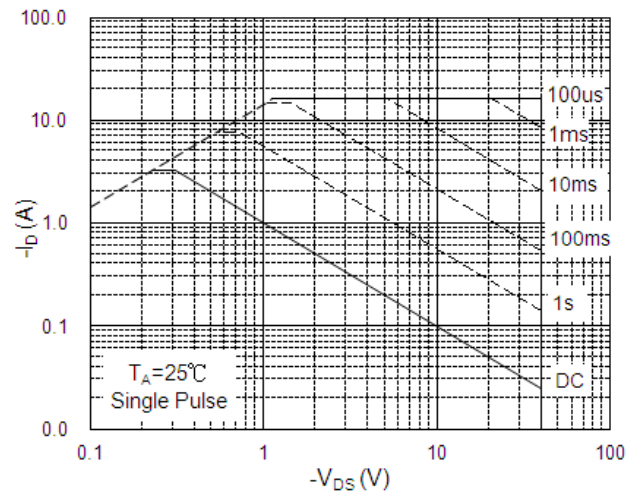
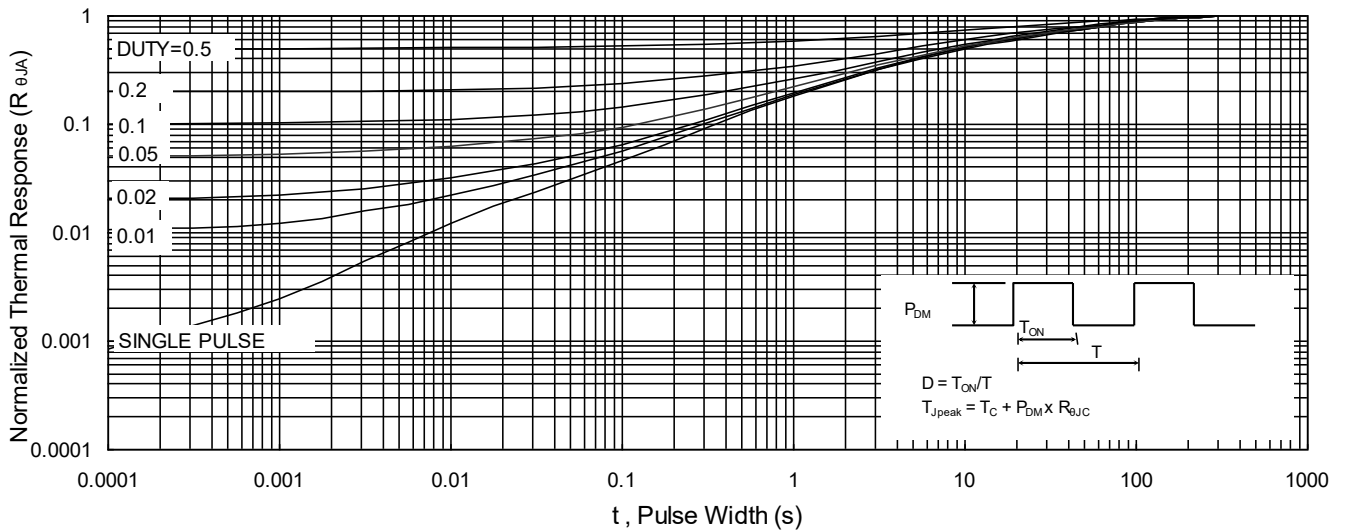
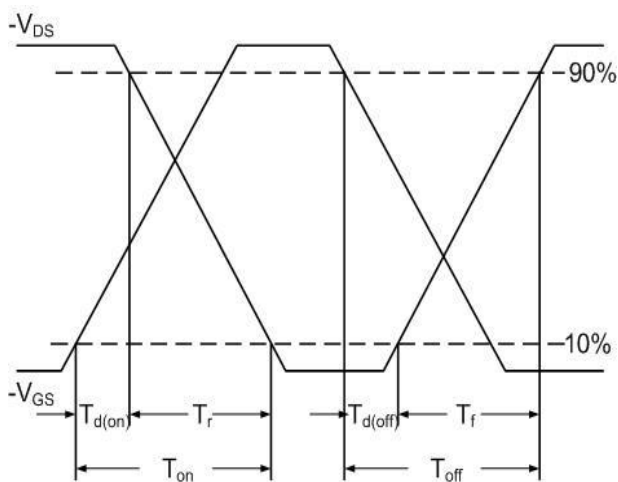
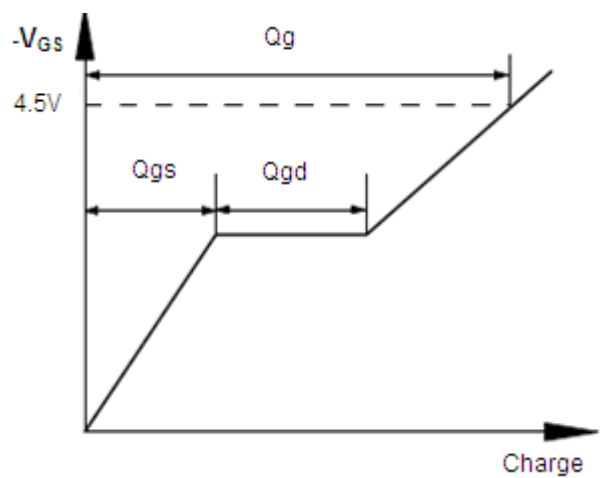
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

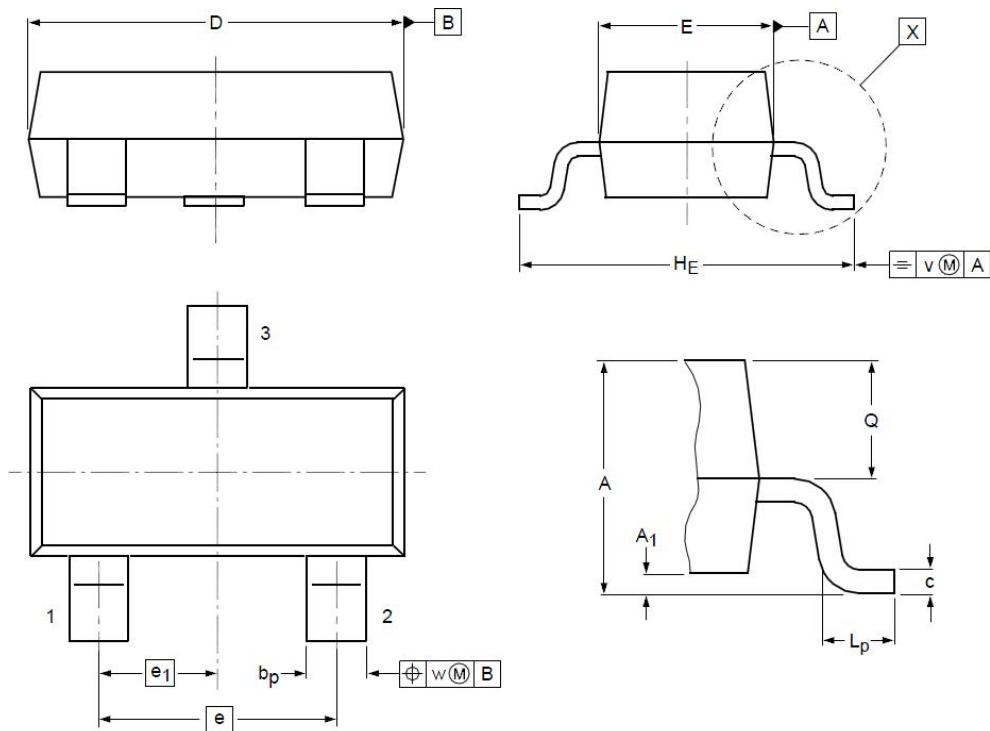
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-3A$	---	45	58	m Ω
		$V_{GS}=-4.5V, I_D=-2A$	---	55	70	
gfs	Forward Transconductance	$V_{DS}=-5V, I_D=-3A$	---	5.8	---	S
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V, \text{Freq.}=1\text{MHz}$	---	620	---	pF
C_{oss}	Output Capacitance		---	65	---	
C_{riss}	Reverse Transfer Capacitance		---	53	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-20V, V_{GS}=-4.5V, R_G=3.3\Omega, I_D=-3A$	---	4.2	---	nS
T_r	Turn-on Rise Time		---	23	---	
$T_{d(off)}$	Turn-off Delay Time		---	26.8	---	
T_f	Turn-off Fall Time		---	20.6	---	
Q_g	Total Gate Charge	$V_{DS}=-32V, V_{GS}=-4.5V, I_D=-3A$	---	6.4	---	nC
Q_{gs}	Gate-Source Charge		---	2.1	---	
Q_{gd}	Gate-Drain Charge		---	2.5	---	
Source-Drain Characteristics						
$V_{SD}^{④}$	Diode Forward Voltage	$I_S=-1A, V_{GS}=0V$	---	---	-1.0	V

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

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

P-Channel Enhancement Mode MOSFET
Typical Characteristics

Fig.1 Typical Output Characteristics

Fig.2 On-Resistance vs. G-S Voltage

Fig.3 Forward Characteristics Of Reverse

Fig.4 Gate-Charge Characteristics

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

Fig.6 Normalized $R_{DS(on)}$ vs. T_J

P-Channel Enhancement Mode MOSFET

Fig.7 Capacitance

Fig.8 Safe Operating Area

Fig.9 Normalized Maximum Transient Thermal Impedance

Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform

P-Channel Enhancement Mode MOSFET
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	e₁	--	0.95	--
A₁	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	--				