P-Channel Enhancement Mode MOSFET
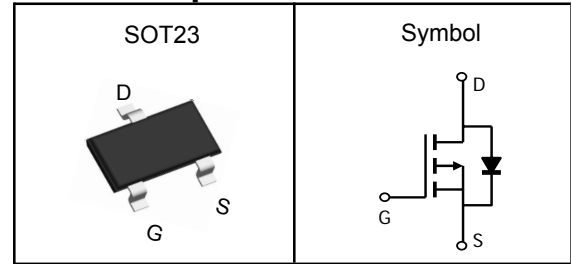
Features

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

Pin Description

SOT23	Symbol

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	-40	V
$R_{DS(ON)-Typ}$	55	mΩ
I_D	-2.9	A

Absolute Maximum Ratings(T_A=25℃, 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	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM}[①]	Pulse Drain Current Tested	-11.6	A
I_D	Continuous Drain Current	-2.9	A
P_D	Maximum Power Dissipation	1.0	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$[③]	Thermal Resistance-Junction to Ambient	125	℃/W

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

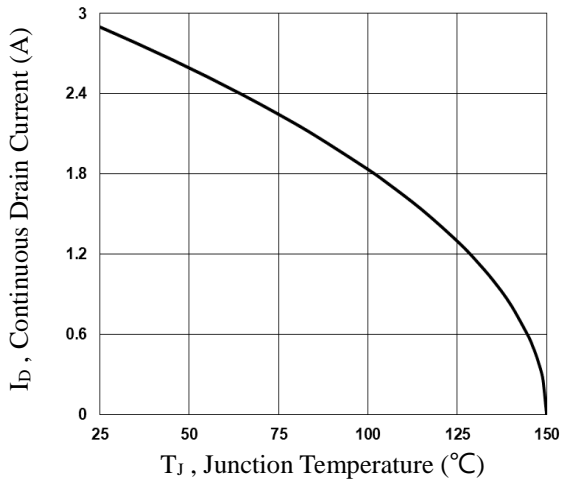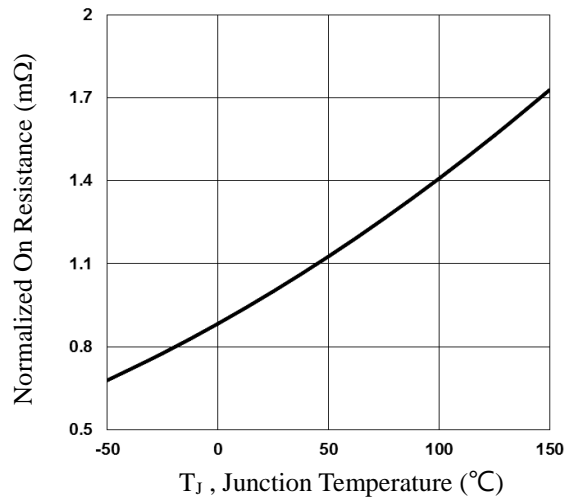Note ② : UIS tested and pulse width are limited by maximum junction temperature 150℃.
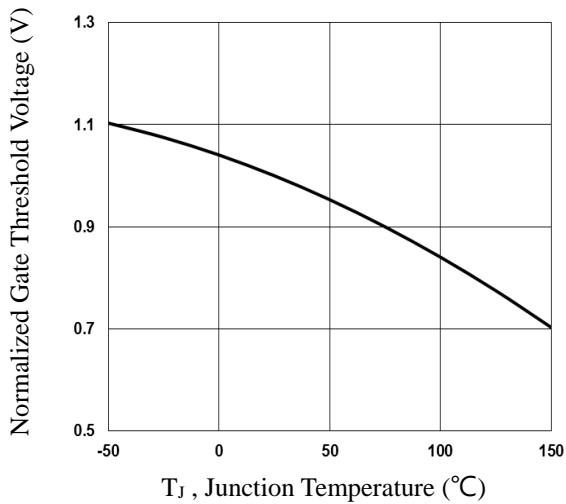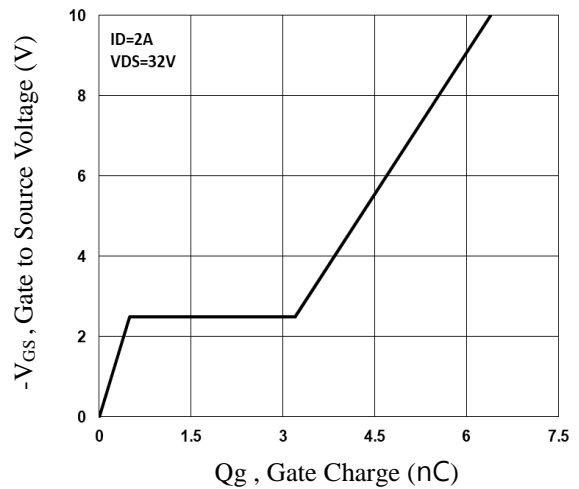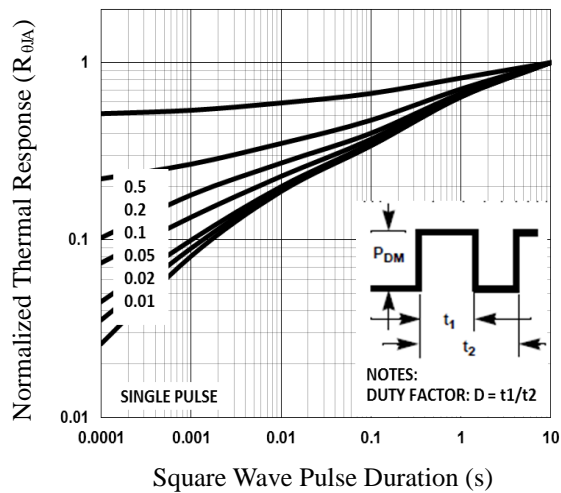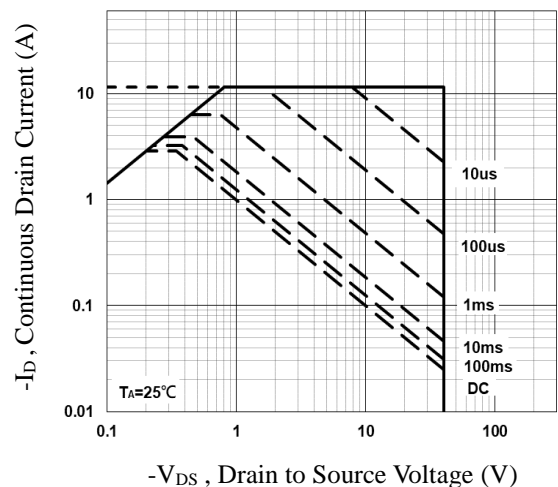
Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.

P-Channel Enhancement Mode MOSFET

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	-40	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=-40V, V$_{GS}$=0V	---	---	-1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=-250uA	-1.0	---	-2.5	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$_D$=-2A	---	55	68	mΩ
		V$_{GS}$=-4.5V, I$_D$=-1A	---	75	100	mΩ
gfs	Forward Transconductance	V$_{DS}$=-10V, I$_D$=-1A	---	3.0	---	S
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=-25V, Freq.=1MHz	---	600	---	pF
C$_{oss}$	Output Capacitance		---	60	---	
C$_{rss}$	Reverse Transfer Capacitance		---	43	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{DD}$=-20V , V$_{GS}$=-10V , R$_G$=6Ω, I$_D$=-1A	---	19	---	nS
T$_r$	Turn-on Rise Time		---	9	---	
T$_{d(off)}$	Turn-off Delay Time		---	45	---	
T$_f$	Turn-off Fall Time		---	5	---	
Q$_g$	Total Gate Charge	V$_{DS}$=-32V , V$_{GS}$=-10V , I$_D$=-2A	---	6.4	---	nC
Q$_{gs}$	Gate-Source Charge		---	0.5	---	
Q$_{gd}$	Gate-Drain Charge		---	2.7	---	
Source-Drain Characteristics （T$_J$=25℃）						
V$_{SD}$[4]	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=-1A , T$_J$=25℃	---	---	-1	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   Continuous Drain Current vs. T_J

Fig.2   Normalized RDSON vs. T_J

Fig.3   Normalized V_{th} vs. T_J

Fig.4   Gate Charge Waveform

Fig.5   Normalized Transient Impedance

Fig.6   Maximum Safe Operation Area

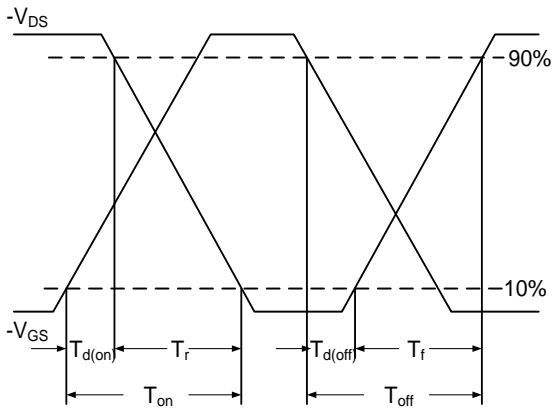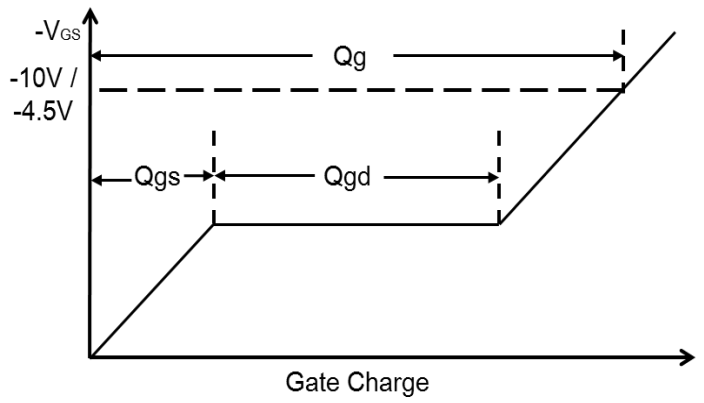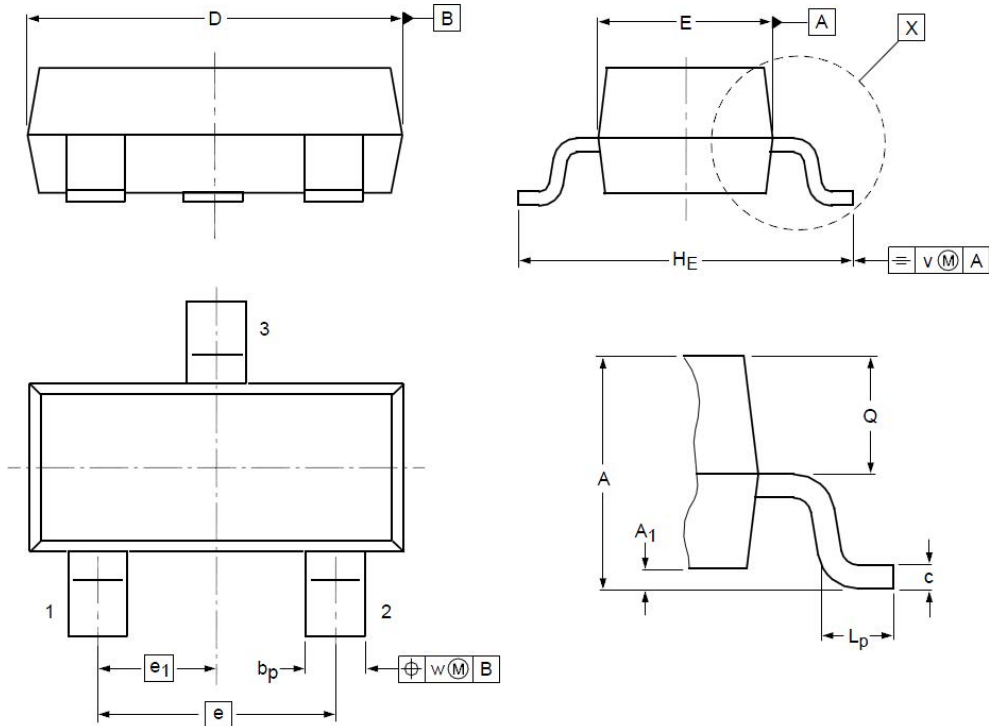## P-Channel Enhancement Mode MOSFET

Fig.7   Switching Time Waveform

Fig.8   Gate Charge Waveform

P-Channel Enhancement Mode MOSFET

SOT23 Package Outline Dimensions

Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.05	1.20	e_1	--	0.95	--
A_1	0.01	0.05	0.10	H_E	2.10	2.40	2.50
b_p	0.38	0.42	0.48	L_P	0.40	0.50	0.60
c	0.09	0.13	0.15	Q	0.45	0.49	0.55
D	2.80	2.92	3.00	V	--	0.20	--
E	1.20	1.33	1.40	W	--	0.10	--
e	--	1.90	--				