

P-Channel Enhancement Mode MOSFET

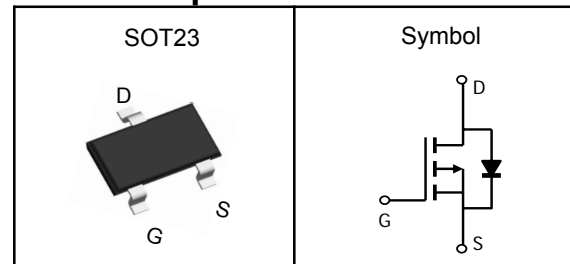
Features

- 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}	-30	V
R _{DS(ON)-Typ}	75	mΩ
I _D	-2.0	A

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

Symbol	Parameter	P-Channel	Unit
V _{DSS}	Drain-Source Voltage	-30	V
V _{GSS}	Gate-Source Voltage	±20	V
T _J	Maximum Junction Temperature	-55 to 150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
I _{DM} ^①	Pulse Drain Current Tested	-10	A
I _D	Continuous Drain Current	-2.0	A
P _D	Maximum Power Dissipation	1.0	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJA} ^③	Thermal Resistance-Junction to Ambient	125	°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.

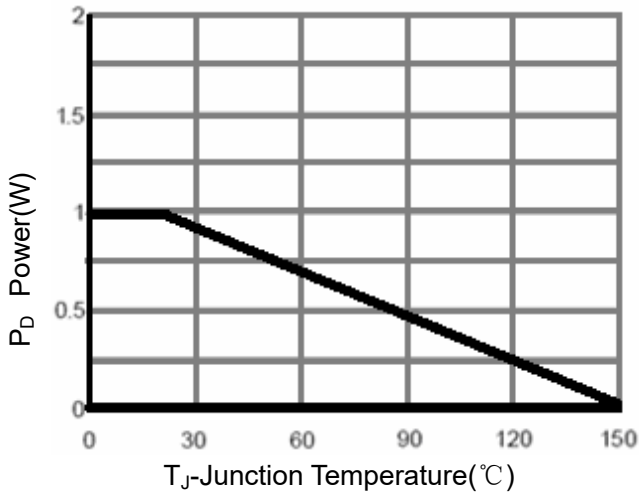
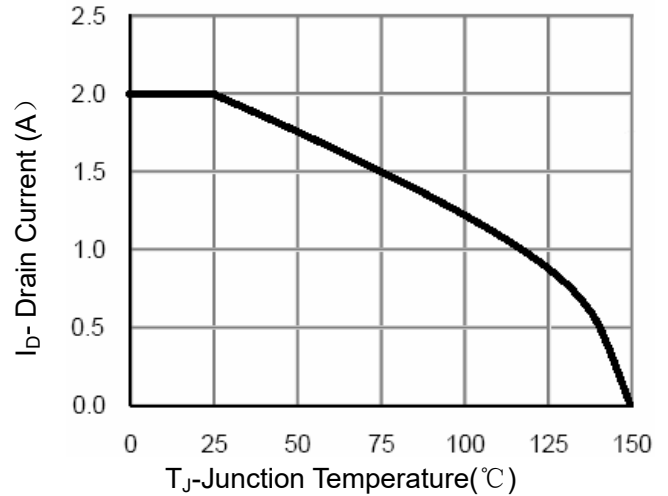
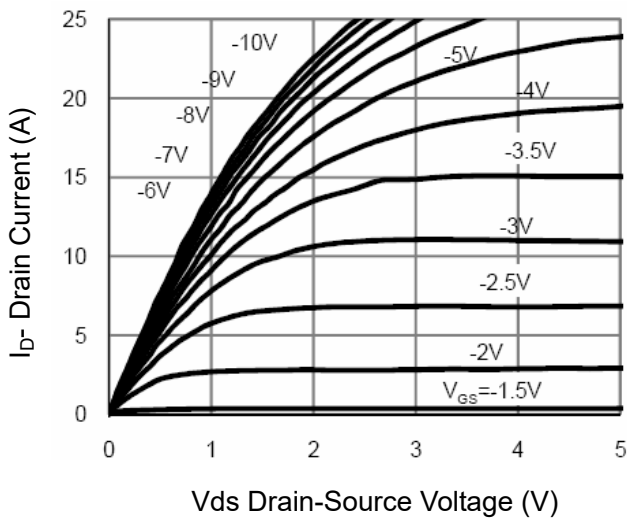
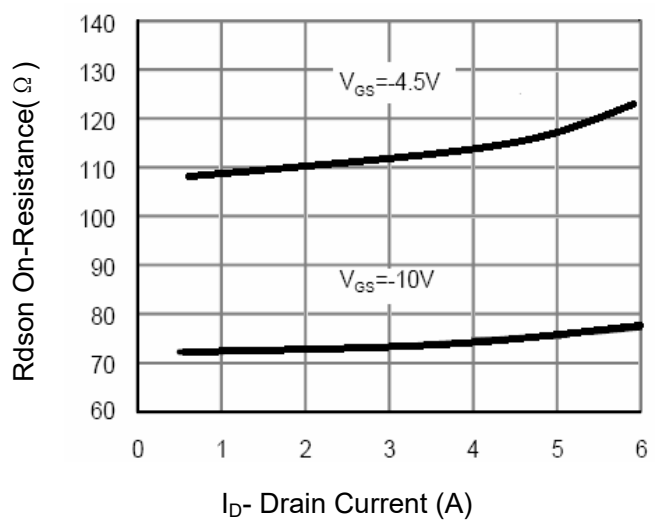
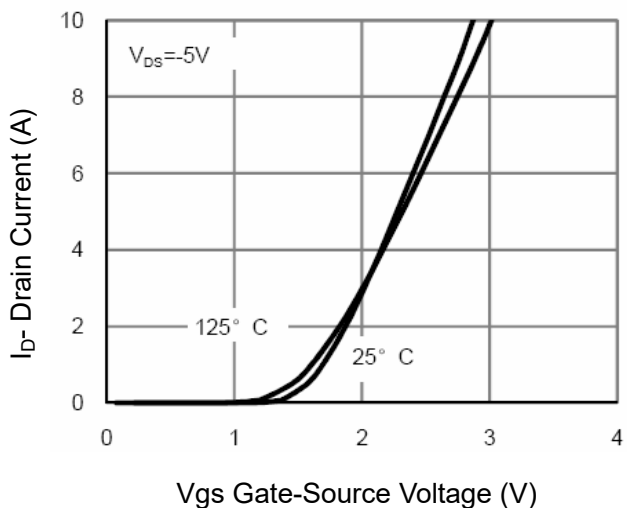
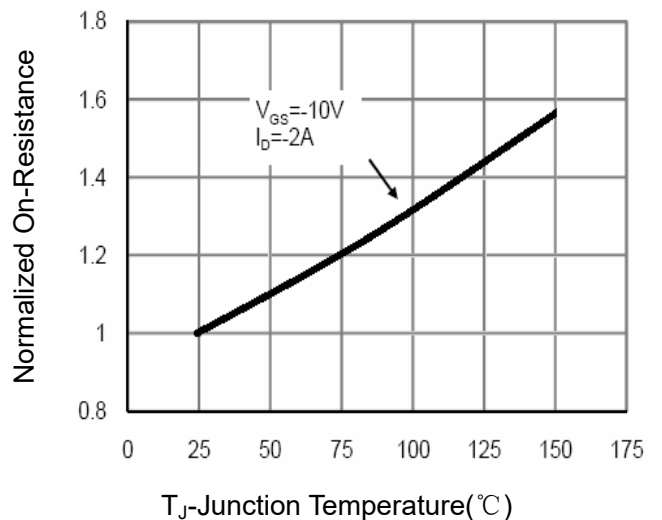
Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.

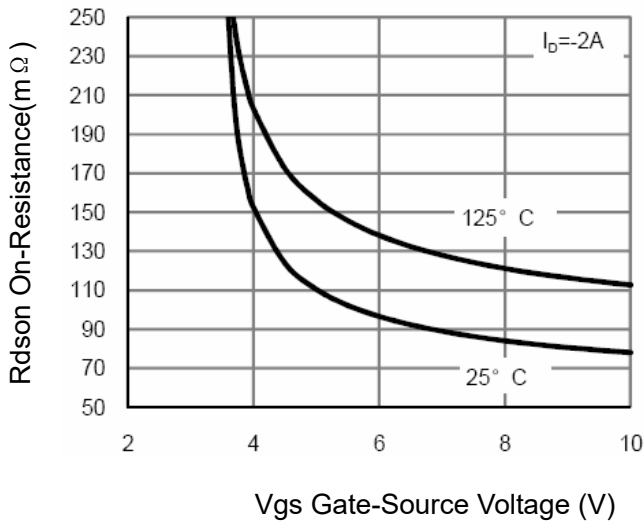
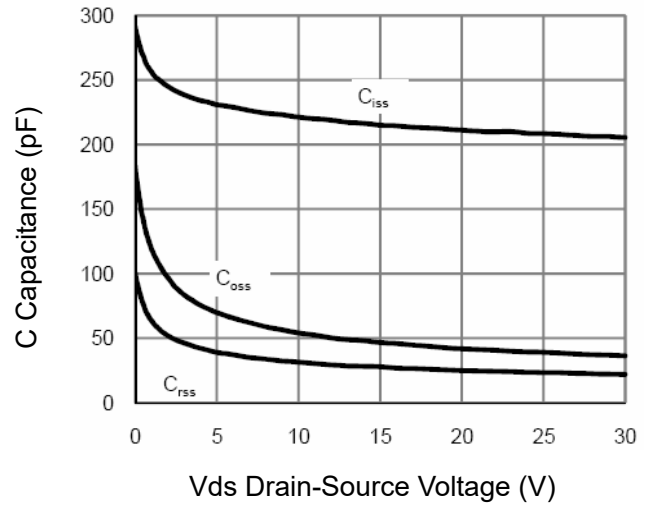
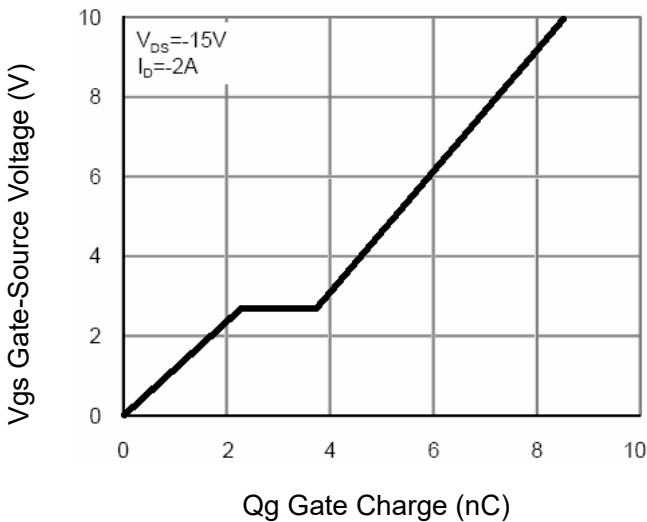
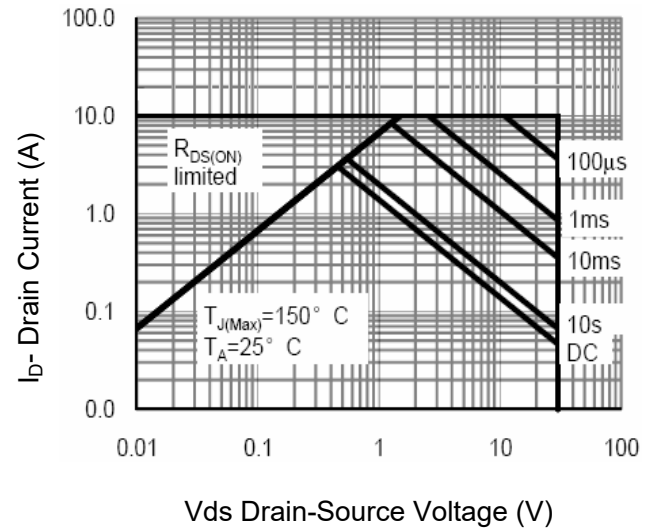
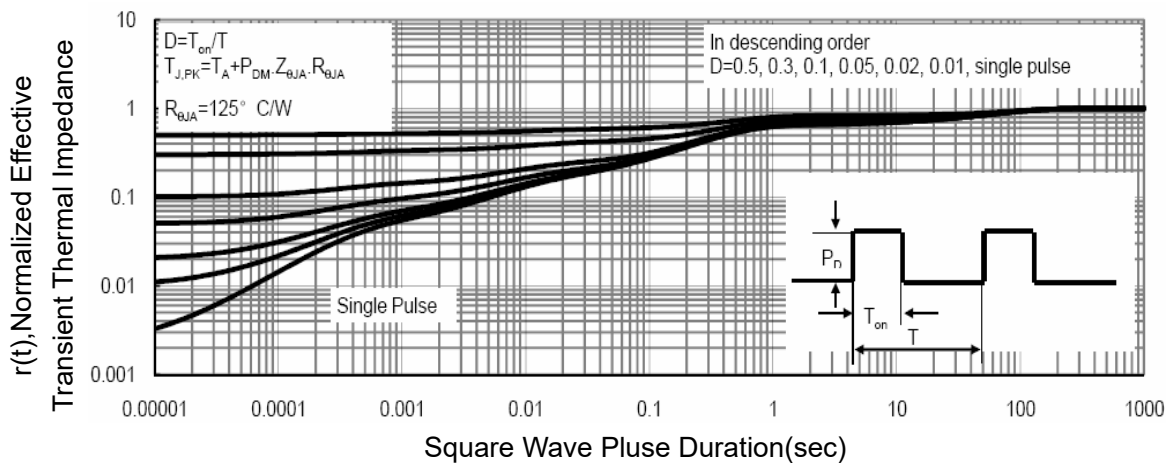
**P-Channel Enhancement Mode MOSFET****Electrical Characteristics** ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

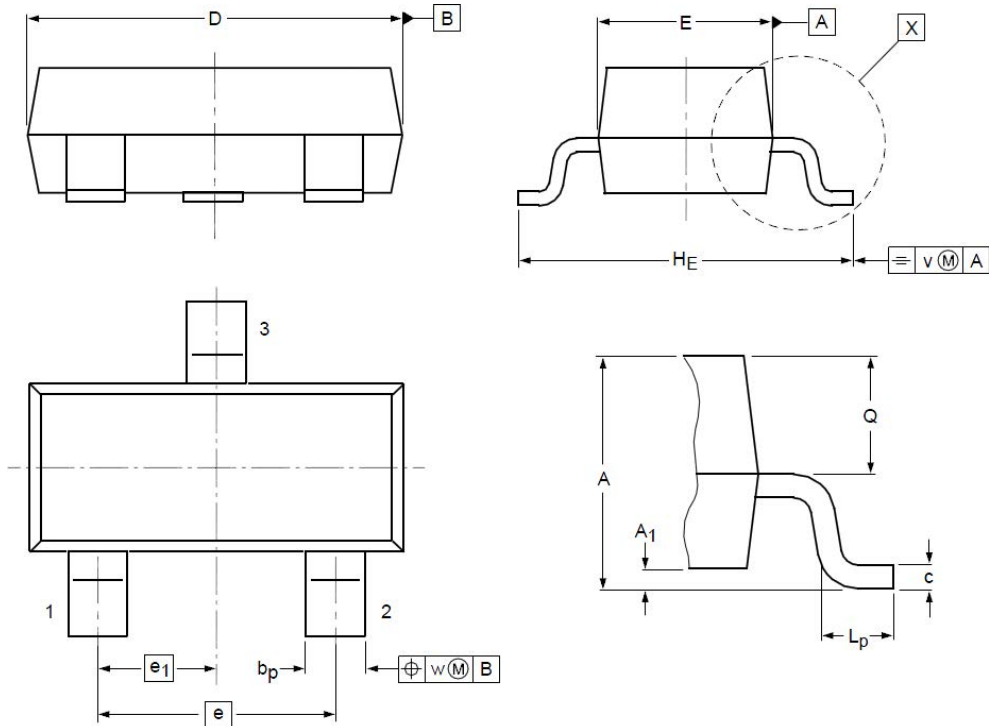
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-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	$V_{GS}=-10V, I_D=-2A$	---	75	130	m Ω
		$V_{GS}=-4.5V, I_D=-1.5A$	---	110	180	
gfs	Forward Transconductance	$V_{DS}=-10V, I_D=-2A$	---	2	---	S
Dynamic Characteristics^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Freq.=1MHz	---	225	---	pF
C_{oss}	Output Capacitance		---	46	---	
C_{rss}	Reverse Transfer Capacitance		---	28	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, V_{GS}=-10V,$ $R_G=6\Omega, R_L=15\Omega$	---	9	---	nS
T_r	Turn-on Rise Time		---	9	---	
$T_{d(off)}$	Turn-off Delay Time		---	18	---	
T_f	Turn-off Fall Time		---	6	---	
Q_g	Total Gate Charge	$V_{GS}=-15V, V_{DS}=-10V,$ $I_D=-2A$	---	8.5	---	nC
Q_{gs}	Gate-Source Charge		---	2.2	---	
Q_{gd}	Gate-Drain Charge		---	1.5	---	
Source-Drain Characteristics						
$V_{SD}^{④}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-2A, T_J=25^{\circ}\text{C}$	---	---	-1.2	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

Figure 1 Power Dissipation

Figure 2 Drain Current

Figure 3 Output Characteristics

Figure 4 Drain-Source On-Resistance

Figure 5 Transfer Characteristics

Figure 6 Drain-Source On-Resistance

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Figure 7 Rdson vs Vgs

Figure 8 Capacitance vs Vds

Figure 9 Gate Charge

Figure 10 Safe Operation Area

Figure 11 Normalized Maximum Transient Thermal Impedance

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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	e₁	--	0.95	--
A₁	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	--				