

P-Channel Enhancement Mode MOSFET

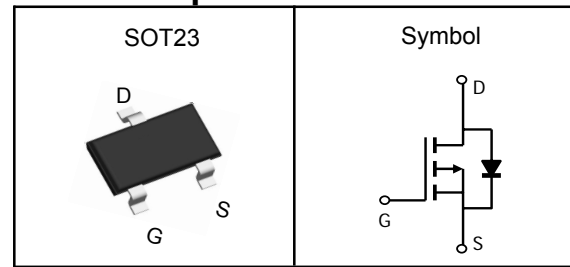
Features

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

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V _{DSS}	-60	V
R _{DS(ON)-Typ}	158	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	-60	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	1.25	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJA} ^③	Thermal Resistance-Junction to Ambient	120	°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.



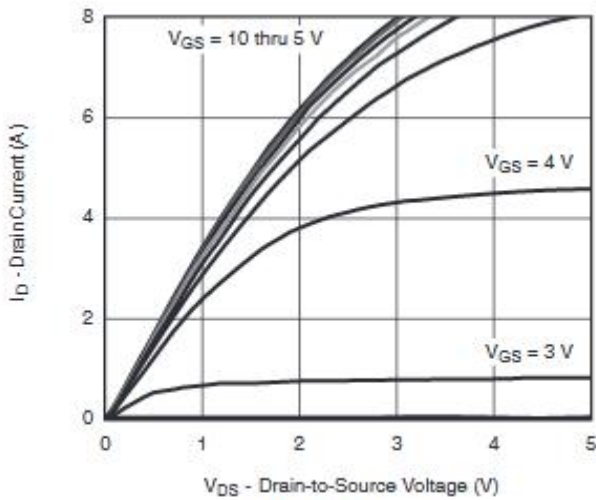
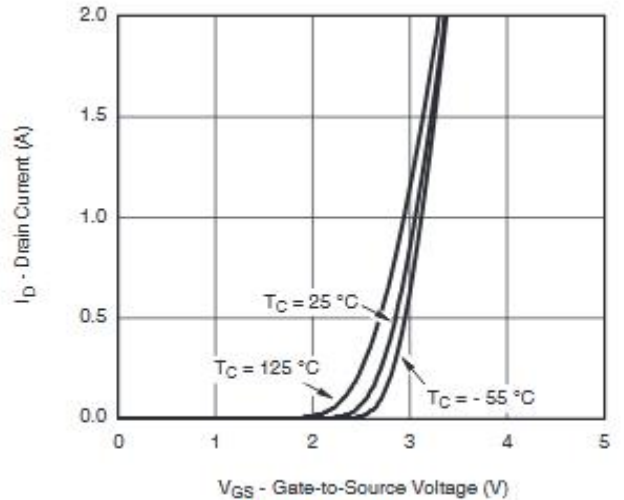
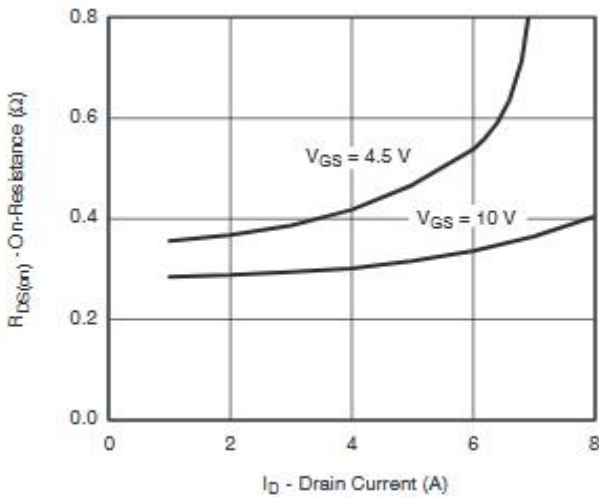
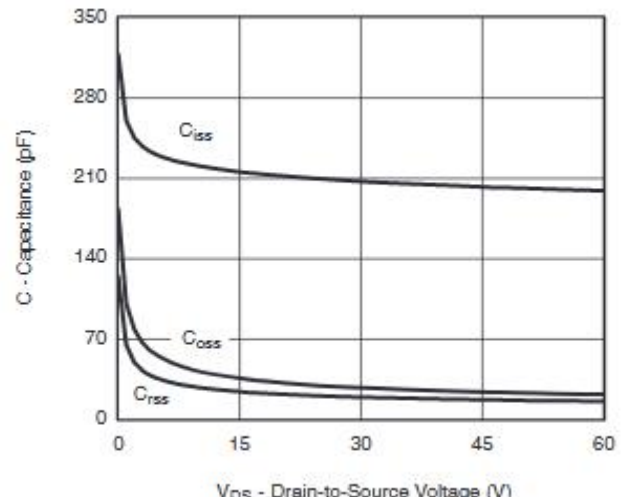
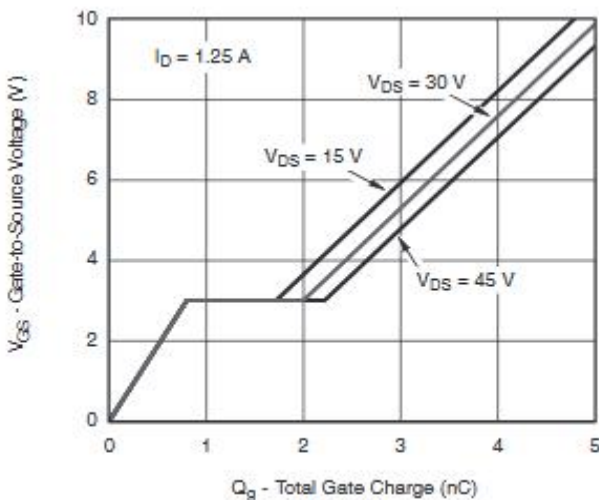
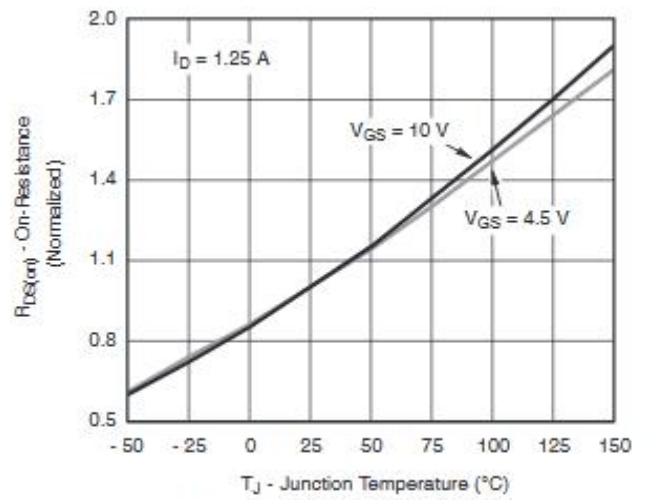
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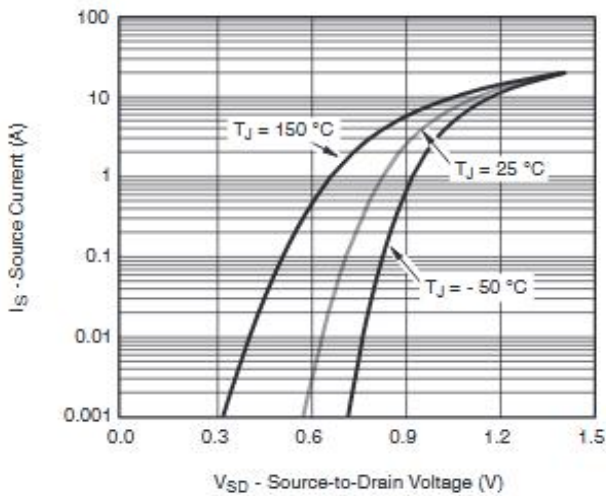
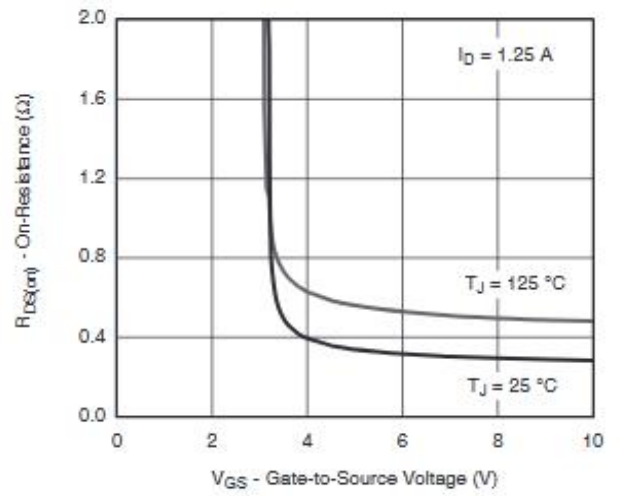
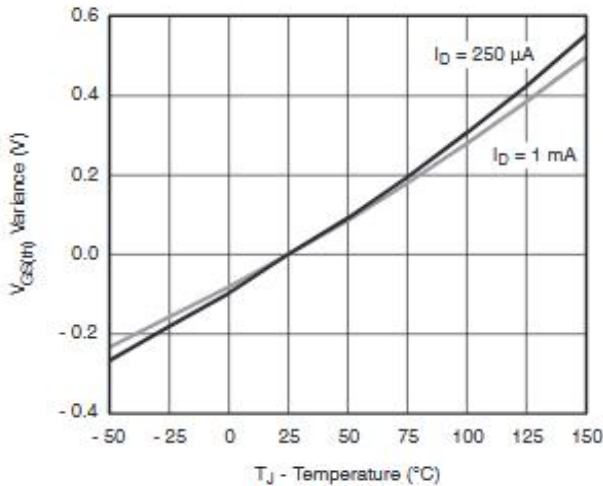
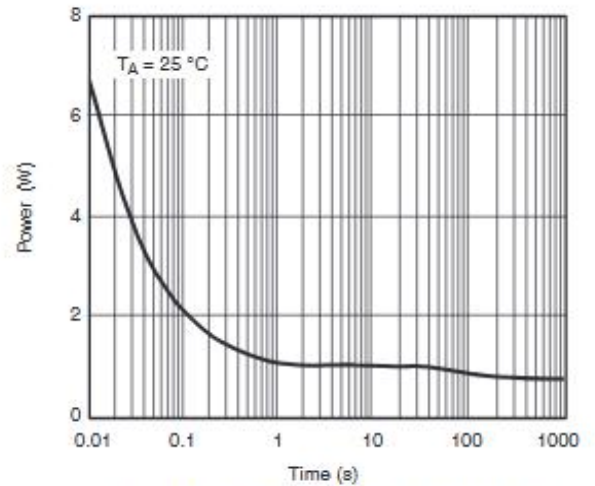
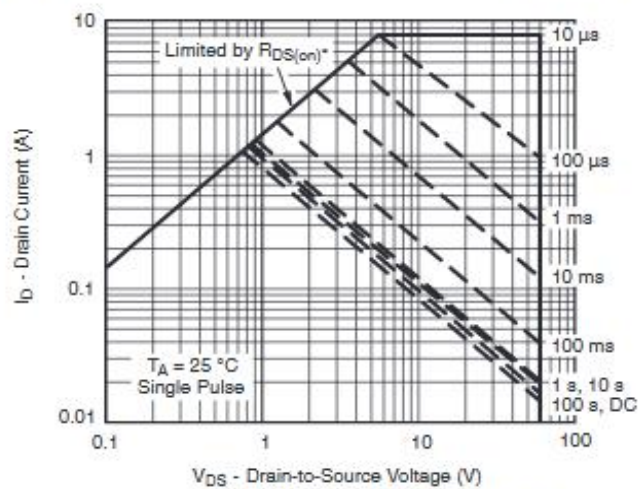
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-3.0	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-2A$	---	158	165	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=-4.5V, I_D=-1A$	---	1.9	---	S
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-30V, \text{Freq.}=1\text{MHz}$	---	210	---	pF
C_{oss}	Output Capacitance		---	28	---	
C_{rss}	Reverse Transfer Capacitance		---	20	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-30V, V_{GS}=-4.5V, R_G=3\Omega, I_D=-1A$	---	10	---	nS
T_r	Turn-on Rise Time		---	11	---	
$T_{d(off)}$	Turn-off Delay Time		---	55	---	
T_f	Turn-off Fall Time		---	35	---	
Q_g	Total Gate Charge	$V_{DS}=-30V, V_{GS}=-10V, I_D=-1.25A$	---	5.4	---	nC
Q_{gs}	Gate-Source Charge		---	1.1	---	
Q_{gd}	Gate-Drain Charge		---	1.0	---	
Source-Drain Characteristics ($T_J=25^{\circ}\text{C}$)						
V_{SD} ^④	Diode Forward Voltage	$I_S=-1.25A, V_{GS}=0V$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-1.25A$	---	30	---	nS
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	35	---	nC

Note ④ : Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

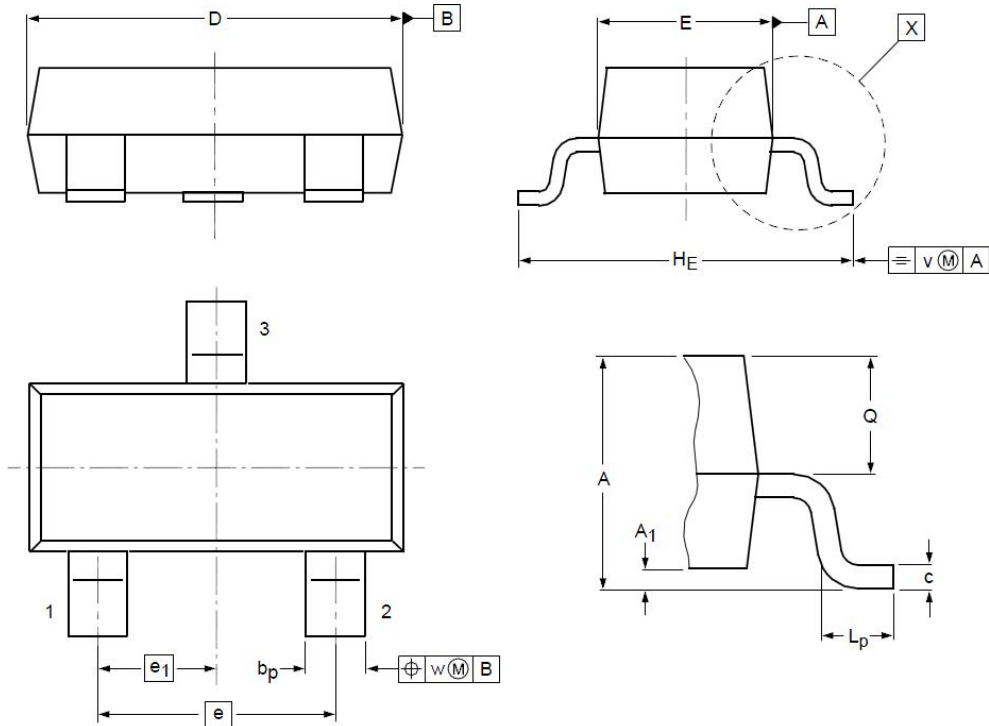
Note ⑤ : Guaranteed by design, not subject to production testing.

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Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current and Gate Voltage

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature

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Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power, Junction-to-Ambient


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

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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	--				