

## P-Channel Enhancement Mode MOSFET

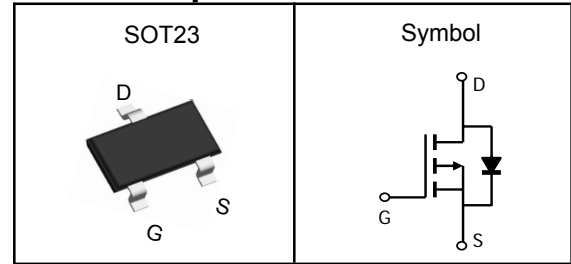
### Features

- 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
$R_{DS(ON)-Typ}$	25	$m\Omega$
$I_D$	-6.0	A

### Absolute Maximum Ratings ( $T_A=25^\circ C$ , Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$T_J$	Maximum Junction Temperature	-55 to 150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$I_{DM}^{①}$	Pulse Drain Current Tested	-20	A
$I_D$	Continuous Drain Current	-6.0	A
$P_D$	Maximum Power Dissipation	1.25	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	101	$^\circ C/W$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature  $150^\circ C$ .

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



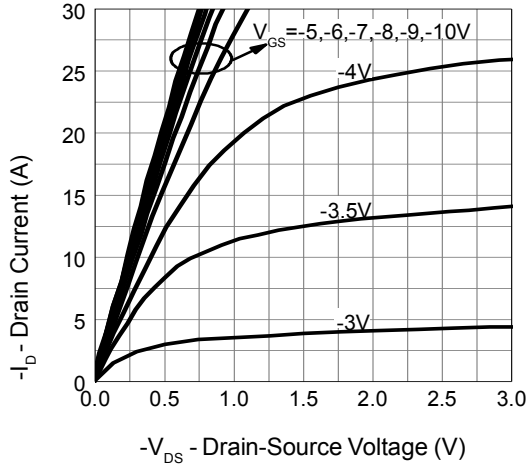
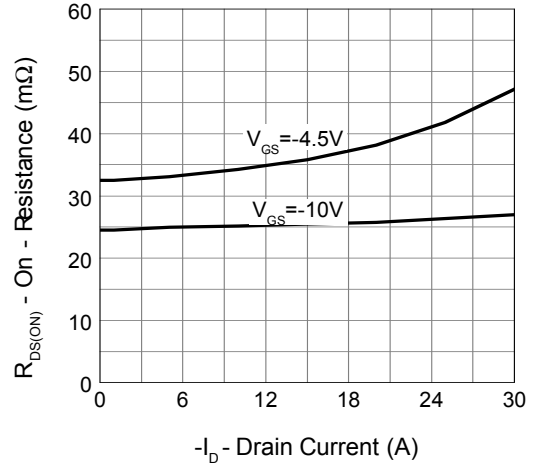
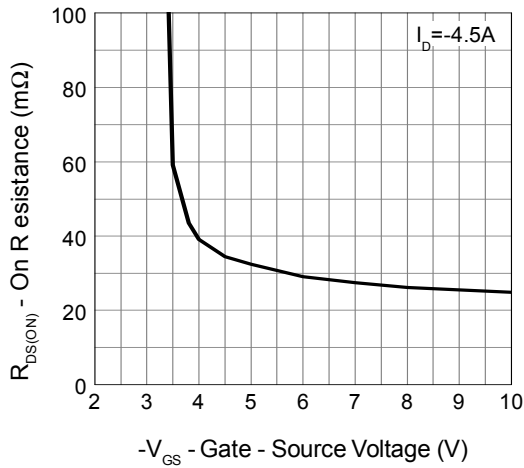
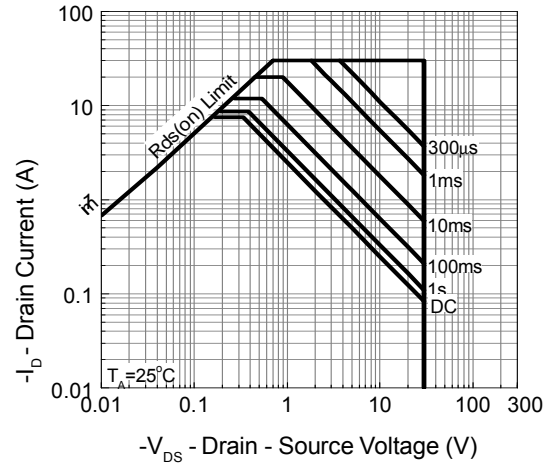
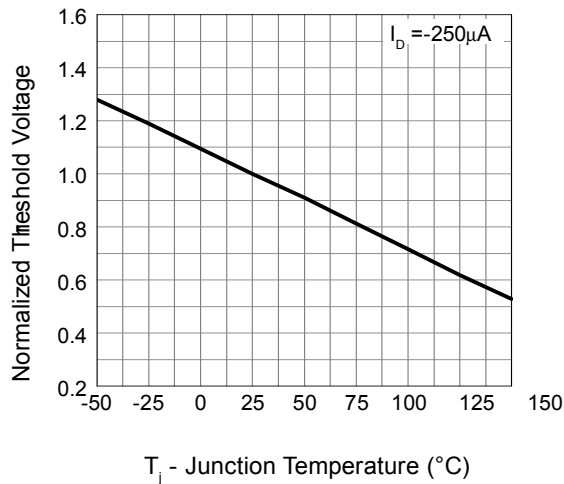
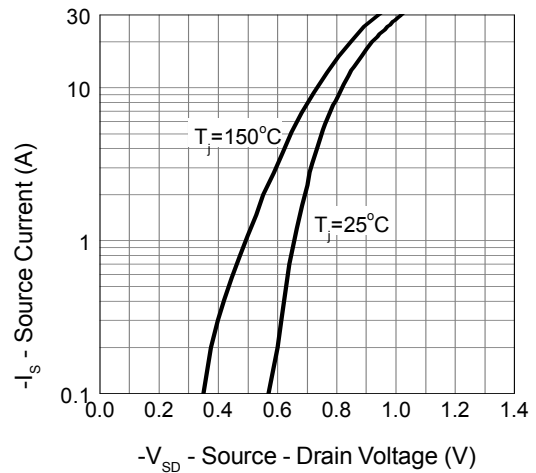
**P-Channel Enhancement Mode MOSFET**

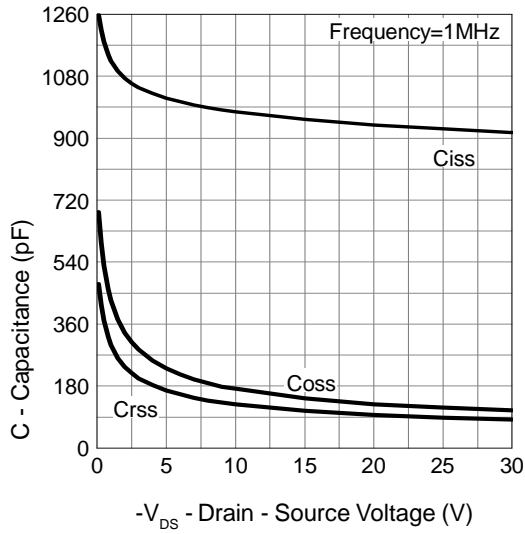
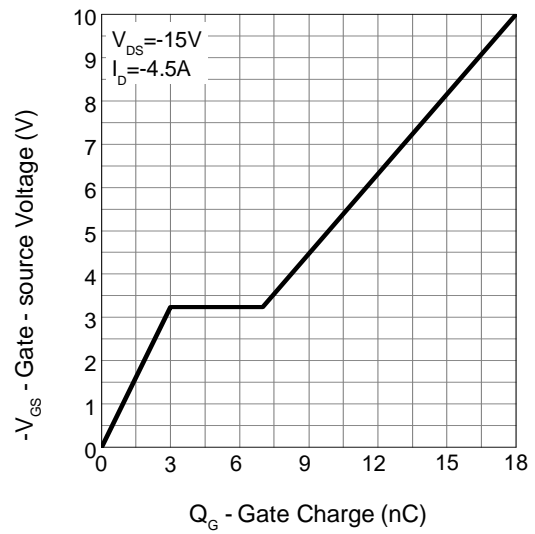
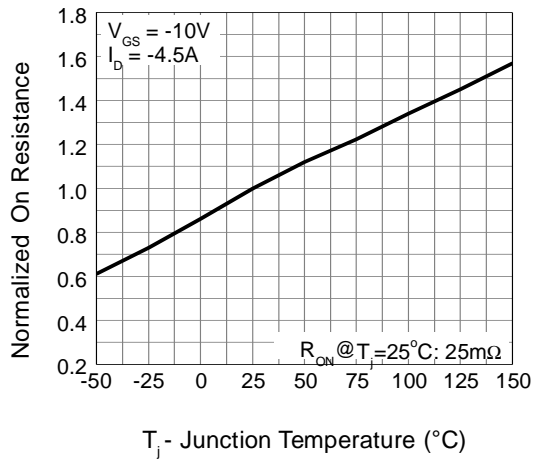
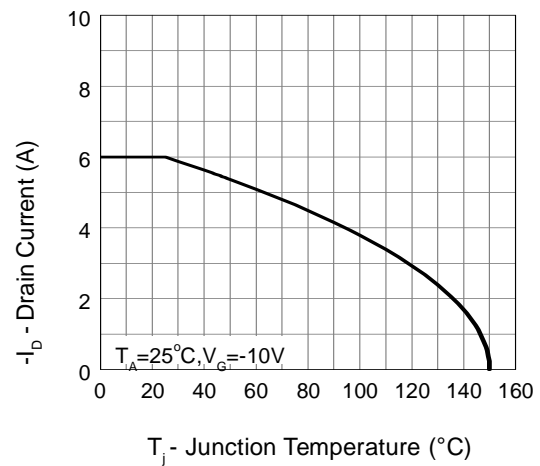
**Electrical Characteristics** (T<sub>J</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	---	---	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V	---	---	-1	uA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.2	---	-2.5	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
R <sub>DS(on)</sub>	Drain-Source On-state Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.5A	---	25	32	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A	---	33	45	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-4.5A	---	16	---	S
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, Freq.=1MHz	---	940	---	pF
C <sub>oss</sub>	Output Capacitance		---	150	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	110	---	
T <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =-15V, R <sub>L</sub> =15Ω, I <sub>DS</sub> =-1A, V <sub>GEN</sub> =-10V, R <sub>G</sub> =6Ω	---	7.5	---	nS
T <sub>r</sub>	Turn-on Rise Time		---	8	---	
T <sub>d(off)</sub>	Turn-off Delay Time		---	37	---	
T <sub>f</sub>	Turn-off Fall Time		---	16	---	
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-10V , I <sub>D</sub> =-4.5A	---	18	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	3	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	4	---	
<b>Source-Drain Characteristics</b>						
V <sub>SD</sub> <sup>④</sup>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =-2A, T <sub>J</sub> =25°C	---	-0.7	-1.1	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>SD</sub> =-4.5A, di/dt=100A/μs, T <sub>J</sub> =25°C	---	19	---	nS
Q <sub>rr</sub>	Reverse Recovery Charge		---	9	---	nC

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**
**Output Characteristics**

**Drain-Source On Resistance**

**Gate-Source On Resistance**

**Safe Operation Area**

**Gate Threshold Voltage**

**Source-Drain Diode Forward**


**P-Channel Enhancement Mode MOSFET**
**Capacitance**

**Gate Charge**

**Drain-Source On Resistance**

**Drain Current**


**P-Channel Enhancement Mode MOSFET**
**SOT23 Package Outline Dimensions**


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.90	1.05	1.20	<b>e<sub>1</sub></b>	--	0.95	--
<b>A<sub>1</sub></b>	0.01	0.05	0.10	<b>H<sub>E</sub></b>	2.10	2.40	2.50
<b>b<sub>p</sub></b>	0.38	0.42	0.48	<b>L<sub>p</sub></b>	0.40	0.50	0.60
<b>c</b>	0.09	0.13	0.15	<b>Q</b>	0.45	0.49	0.55
<b>D</b>	2.80	2.92	3.00	<b>V</b>	--	0.20	--
<b>E</b>	1.20	1.33	1.40	<b>W</b>	--	0.10	--
<b>e</b>	--	1.90	--				