

## P-Channel Enhancement Mode MOSFET

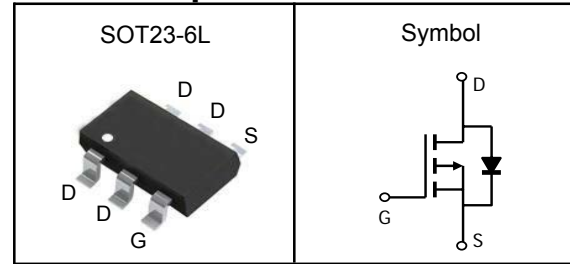
### Features

- Low R<sub>dson</sub> for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

### Applications

- Power Management in Desktop Computer
- DC/DC Converters

### Pin Description



V <sub>DSS</sub>	-30	V
R <sub>DS(ON)-Typ</sub>	45	mΩ
I <sub>D</sub>	-5.1	A

### Absolute Maximum Ratings (T<sub>A</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	P-Channel	Unit
V <sub>DSS</sub>	Drain-Source Voltage	-30	V
V <sub>GSS</sub>	Gate-Source Voltage	±12	V
T <sub>J</sub>	Maximum Junction Temperature	-55 to 150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
I <sub>DM</sub> <sup>①</sup>	Pulse Drain Current Tested	-20.3	A
I <sub>D</sub>	Continuous Drain Current	-5.1	A
P <sub>D</sub>	Maximum Power Dissipation	2.1	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
R <sub>θJA</sub> <sup>③</sup>	Thermal Resistance-Junction to Ambient	100	°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<sup>2</sup> FR-4 board with 1oz.



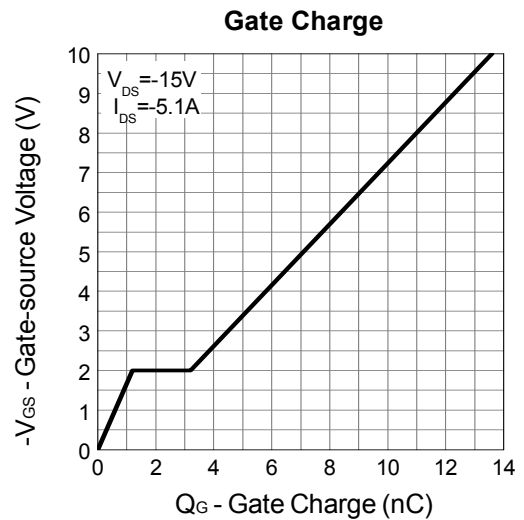
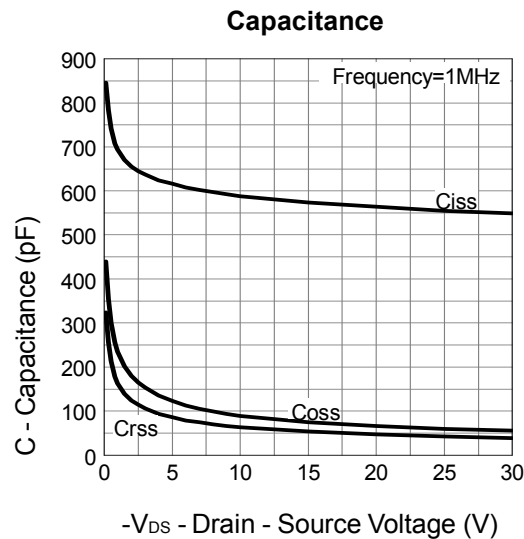
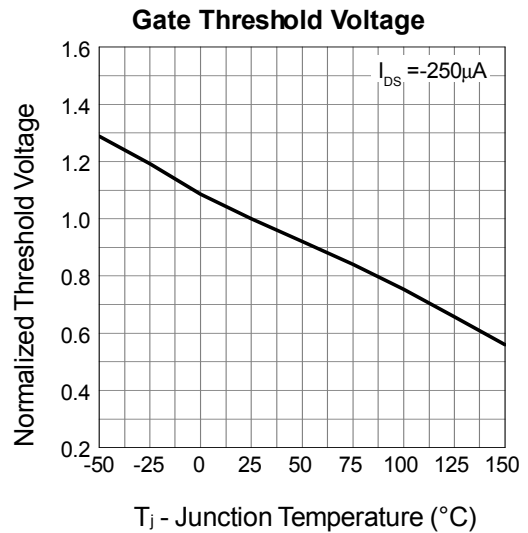
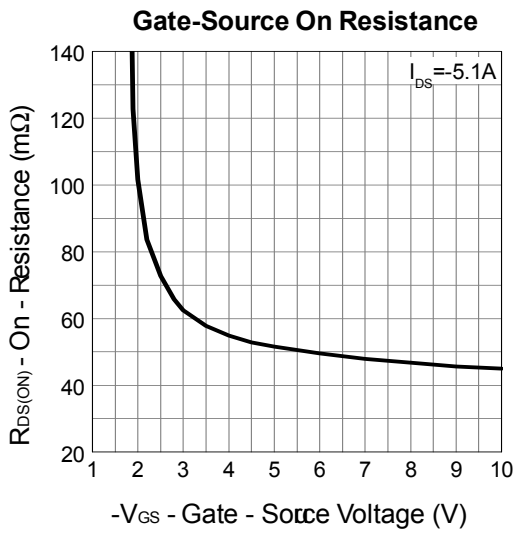
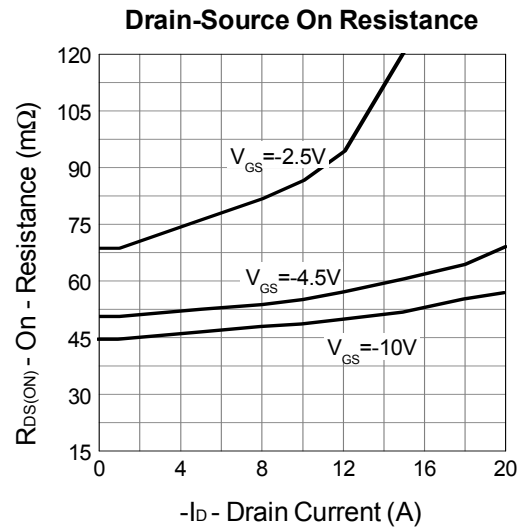
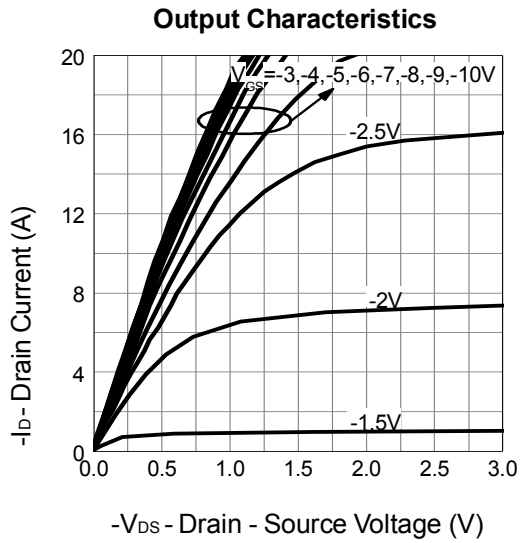
**P-Channel Enhancement Mode MOSFET**

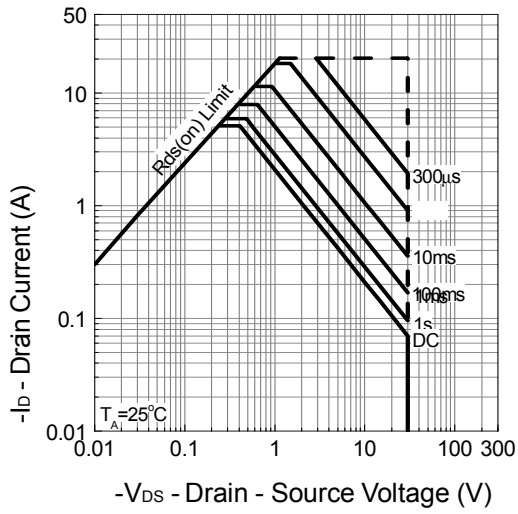
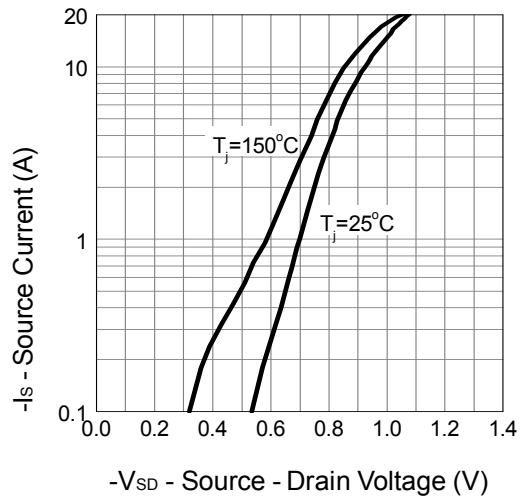
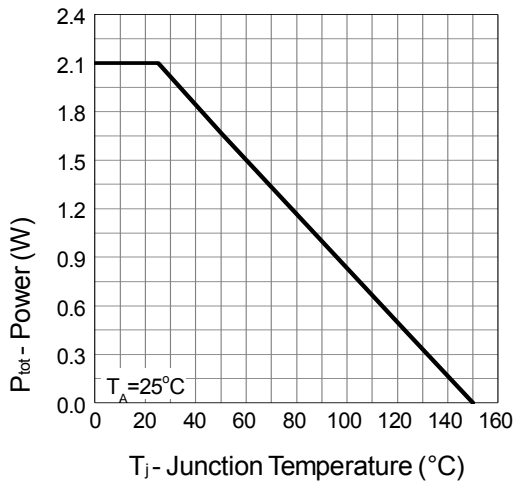
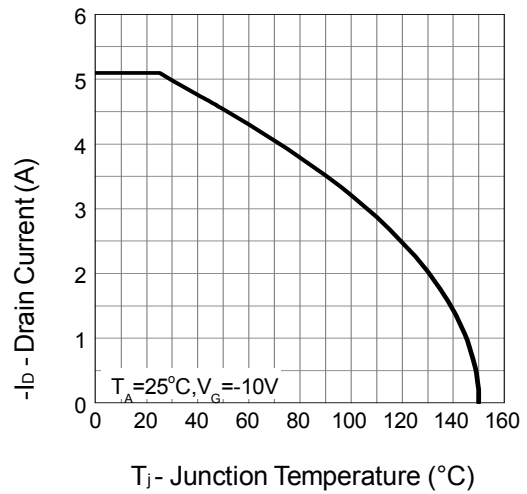
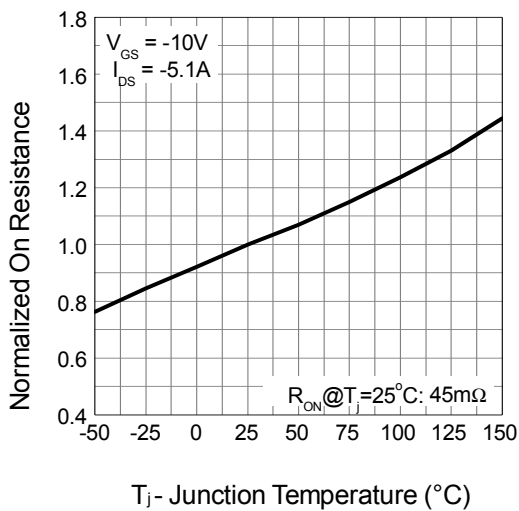
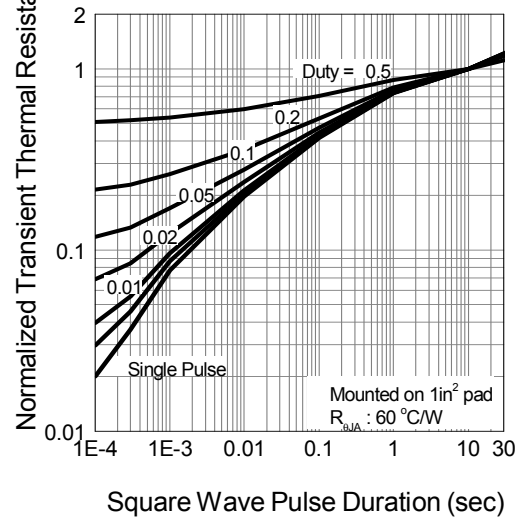
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$	---	---	-1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	---	-1.3	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-5.1A$	---	45	54	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4.1A$	---	52	65	
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	---	3.6	---	$\Omega$
<b>Dynamic Characteristics<sup>⑤</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=-15V, Freq.=1MHz$	---	573	---	pF
$C_{oss}$	Output Capacitance		---	74	---	
$C_{rss}$	Reverse Transfer Capacitance		---	53	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, R_L=10\Omega, I_{DS}=-1A, V_{GEN}=-10V, R_G=6\Omega$	---	6.9	---	nS
$T_r$	Turn-on Rise Time		---	12.3	---	
$T_{d(off)}$	Turn-off Delay Time		---	25	---	
$T_f$	Turn-off Fall Time		---	13	---	
$Q_g$	Total Gate Charge	$V_{GS}=-15V, V_{DS}=-10V, I_D=-5.1A$	---	13.6	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.2	---	
$Q_{gd}$	Gate-Drain Charge		---	2.0	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}^{④}$	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}\text{C}$	---	-0.7	-1.0	V
$t_{rr}$	Reverse Recovery Time	$I_F=-5.1A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	16	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	11	---	nC

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

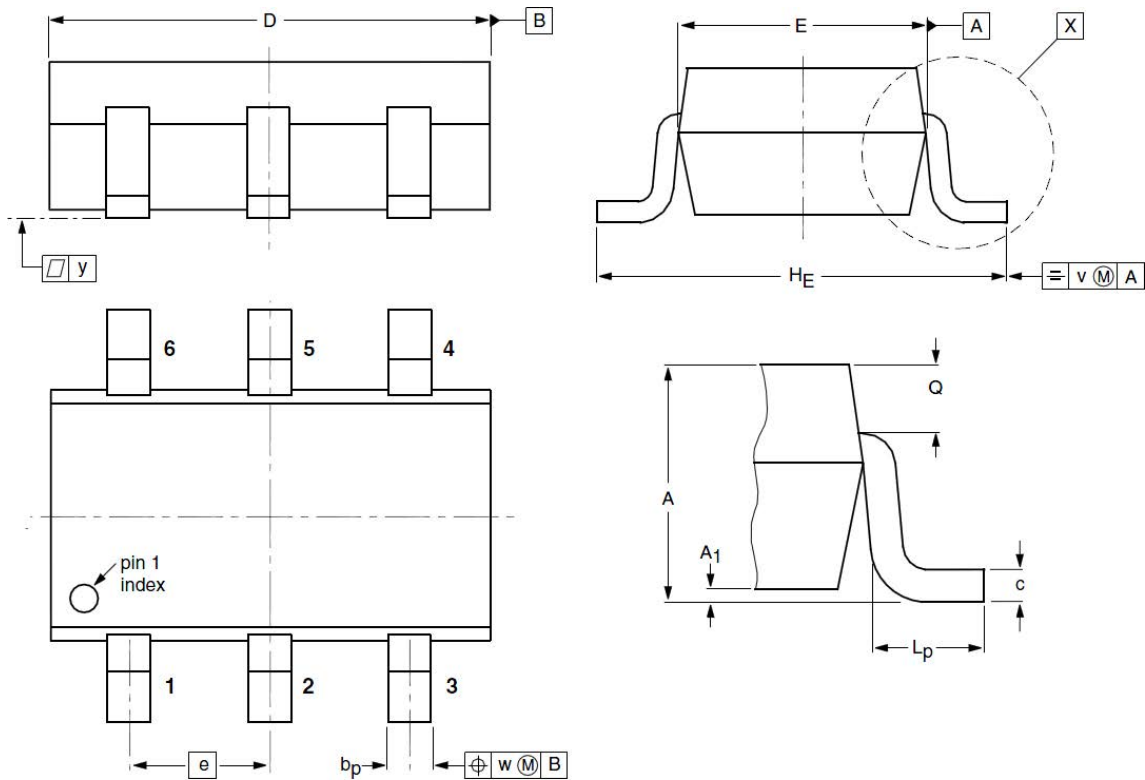
Note ⑤: Guaranteed by design, not subject to production testing.

**P-Channel Enhancement Mode MOSFET**
**Typical Characteristics**


**P-Channel Enhancement Mode MOSFET**
**Safe Operation Area**

**Source-Drain Diode Forward**

**Power Dissipation**

**Drain Current**

**Drain-Source On Resistance**

**Thermal Transient Impedance**


D!7\ UbY`9b\ UbWYa YbhAcXY`ACG: 9H

GCH&!\* @DUW\_Uj Y`Ci h]bY`8]a Ybg]cbg



Gna Vc`	8]a Ybg]cbg (unit:mm)			Gna Vc`	8]a Ybg]cbg (unit:mm)		
	A]b	Hnd	AU		A]b	Hnd	AU
5	0.90	1.07	1.45	5%	0.01	0.05	0.15
V <sub>d</sub>	0.30	0.40	0.50	W	0.10	0.15	0.22
'8`	2.70	2.92	3.10	9	1.35	1.55	1.75
Y	--	0.95	--	<sub>9</sub>	2.50	2.80	3.00
@	0.30	0.45	0.60	E	0.23	0.29	0.33
j	--	0.20	--	K	--	0.20	--
m	--	0.10	--				