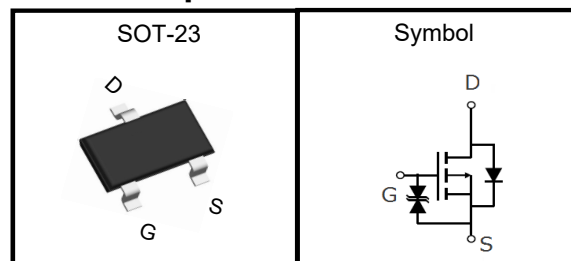


**P-Channel Enhancement Mode MOSFET**
**Feature**

- High dense cell design for extremely Low RDS (on)
- Exceptional on-resistance and maximum DC current capability

**Applications**

- Load Switch for Portable Devices
- DC/DC Converters

**Pin Description**


$V_{DSS}$	-30	V
$R_{DS(ON)-Max}$	60	m $\Omega$
$I_D$	-4.2	A

**Absolute Maximum Ratings ( $T_A=25^{\circ}C$  unless otherwise noted)**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	-4.2	A
Drain Current-Pulsed <sup>(Note 1)</sup>	$I_{DM}$	-25	A
Maximum Power Dissipation	$P_D$	1.4	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^{\circ}C$

**Thermal Characteristic**

Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	104	$^{\circ}C/W$
---	-----------------	-----	---------------

**P-Channel Enhancement Mode MOSFET****Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise noted)**

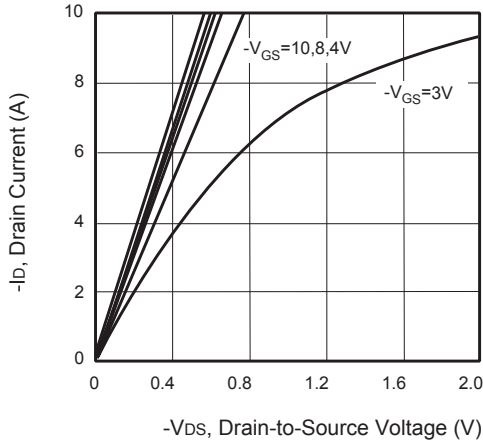
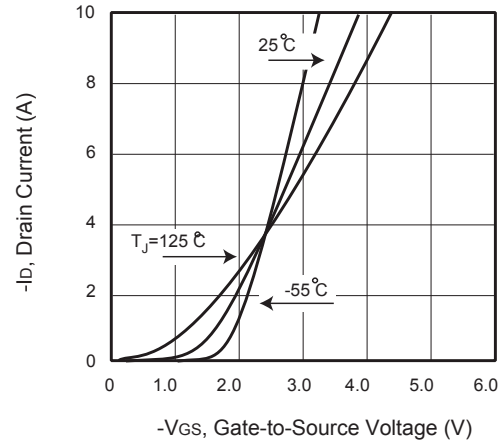
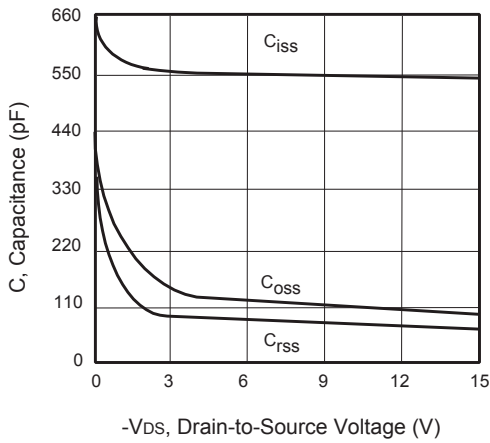
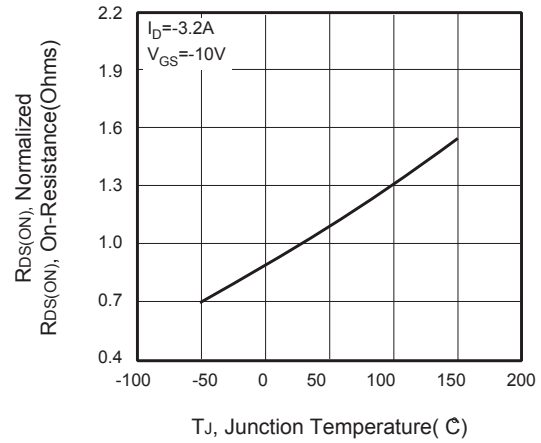
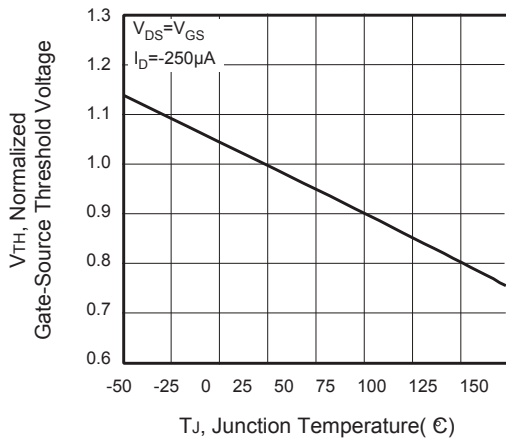
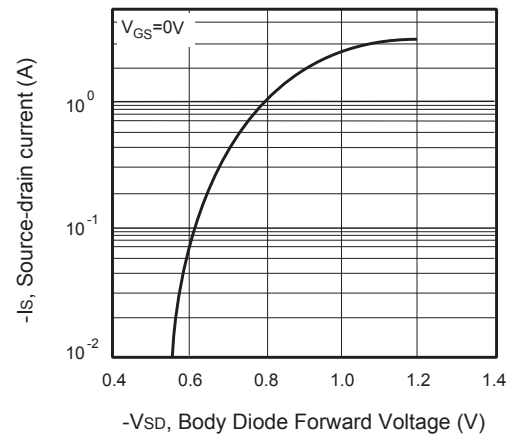
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30		-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-	-2.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.2A$	-	50	60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4A$	-	60	87	m $\Omega$
		$V_{GS}=-2.5V, I_D=-1A$		85	100	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-4.2A$	-	10	-	S
<b>Dynamic Characteristics</b> (Note 4)						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0MHz$	-	550	-	PF
Output Capacitance	$C_{oss}$		-	100	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	60	-	PF
<b>Switching Characteristics</b> (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1A$ $V_{GS}=-10V, R_{GEN}=6\Omega$	-	9	-	nS
Turn-on Rise Time	$t_r$		-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	$t_f$		-	7	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-3.2A, V_{GS}=-4.5V$	-	6	-	nC
Gate-Source Charge	$Q_{gs}$		-	1.2	-	nC
Gate-Drain Charge	$Q_{gd}$		-	2.8	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage (Note 3)	$V_{SD}$	$V_{GS}=0V, I_S=-1A$	-	-	-1.2	V

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

# P-Channel Enhancement Mode MOSFET

## Typical Characteristics


**Figure 1. Output Characteristics**

**Figure 2. Transfer Characteristics**

**Figure 3. Capacitance**

**Figure 4. On-Resistance Variation with Temperature**

**Figure 5. Gate Threshold Variation with Temperature**

**Figure 6. Body Diode Forward Voltage Variation with Source Current**

**P-Channel Enhancement Mode MOSFET**

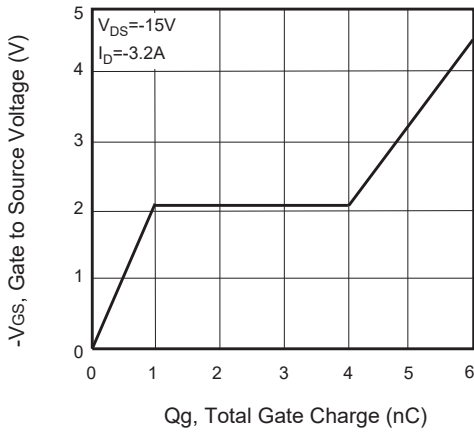


Figure 7. Gate Charge

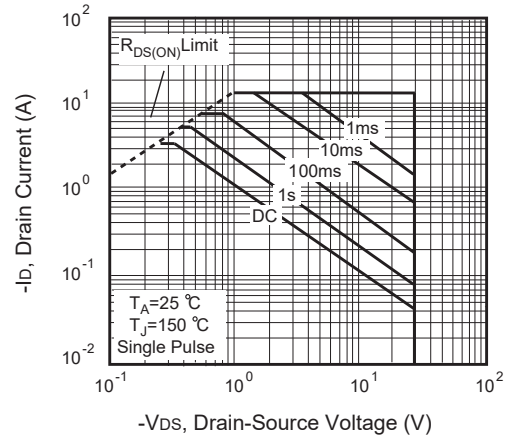


Figure 8. Maximum Safe Operating Area

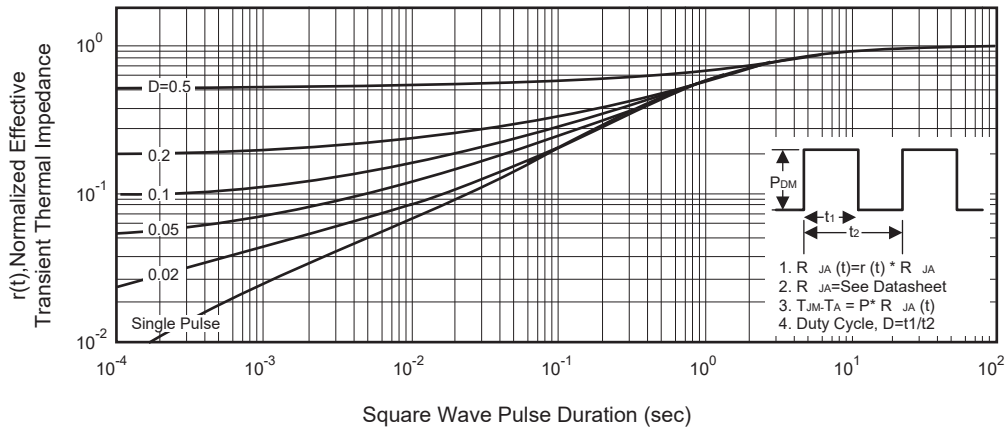
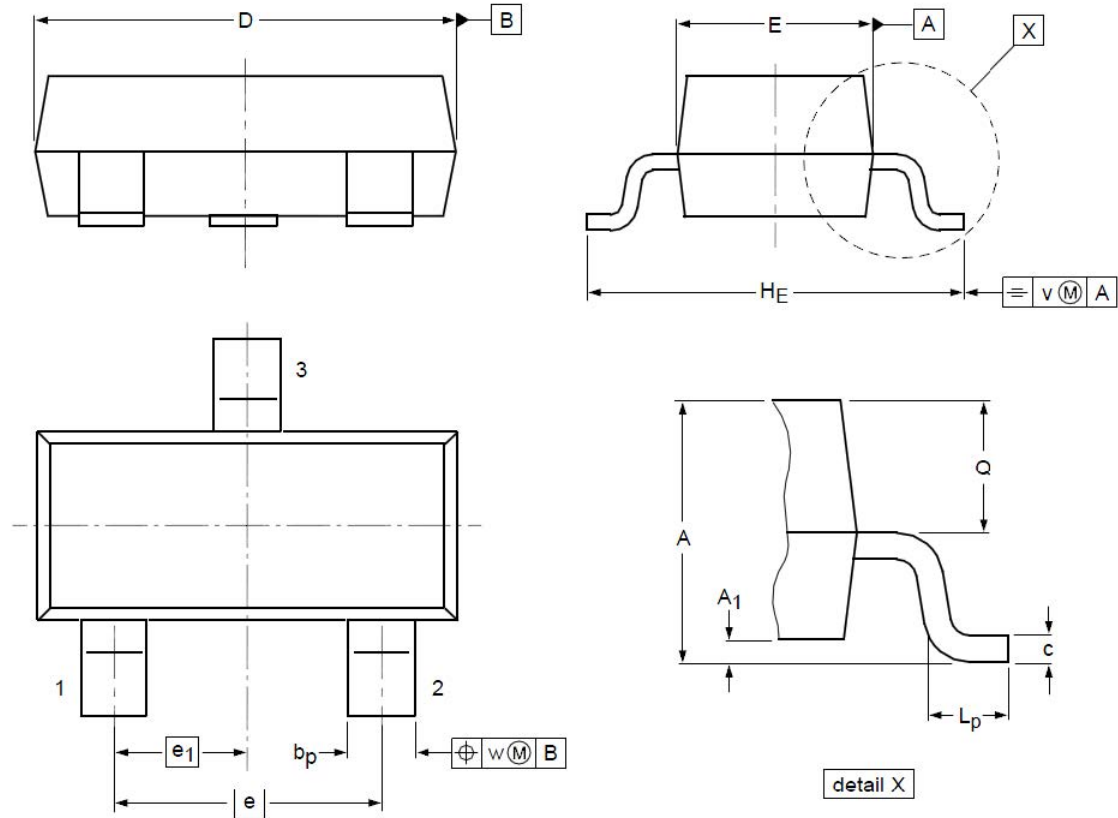


Figure 9. Normalized Thermal Transient Impedance Curve

**P-Channel Enhancement Mode MOSFET**
**SOT-23 Package Outline Data**

**DIMENSIONS ( unit : mm )**

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
<b>A</b>	0.90	1.03	1.10	<b>A<sub>1</sub></b>	0.01	0.05	0.10
<b>b<sub>p</sub></b>	0.38	0.42	0.48	<b>c</b>	0.09	0.13	0.15
<b>D</b>	2.80	2.92	3.00	<b>E</b>	1.20	1.33	1.40
<b>e</b>	--	1.90	--	<b>e<sub>1</sub></b>	--	0.95	--
<b>H<sub>E</sub></b>	2.10	2.40	2.50	<b>L<sub>p</sub></b>	0.40	0.50	0.60
<b>Q</b>	0.45	0.49	0.55	<b>v</b>	--	0.20	--
<b>w</b>	--	0.10	--				