

## P-Channel Enhancement Mode MOSFET

### Features

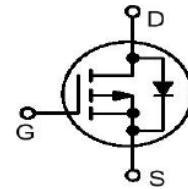
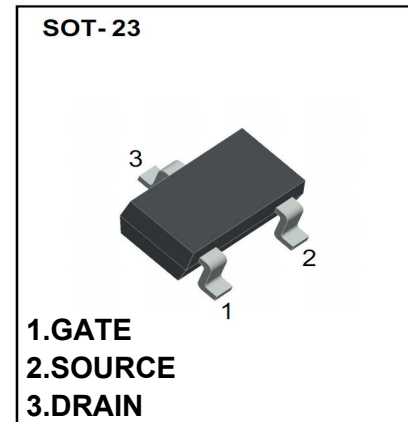
- $R_{DS(ON)} \leq 65m\Omega @ V_{GS} = -4.5V$ .
- $R_{DS(ON)} \leq 100m\Omega @ V_{GS} = -2.5V$ .
- Super High Density Cell Design For Extremely Low  $R_{DS(ON)}$ .
- Reliable and Rugged.
- Electrostatic Sensitive Devices.

### Typical Applications

- Power Management In Note Book.
- Portable Equipment.
- Battery Powered System.

### Mechanical Data

- Case: SOT-23
- Molding Compound, UL Flammability Classification Rating 94V-0.
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208.



### Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

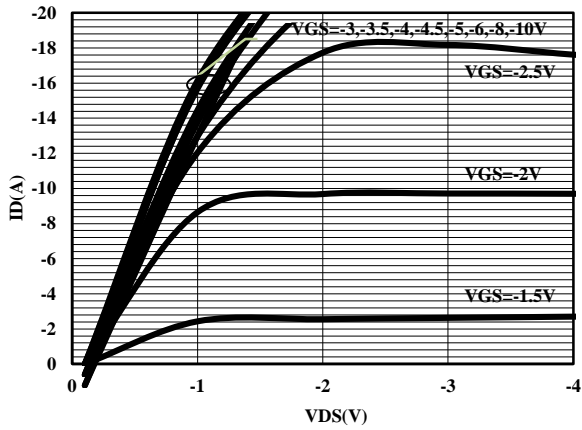
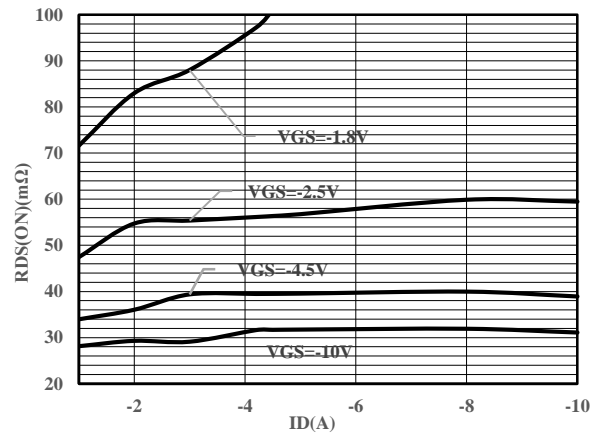
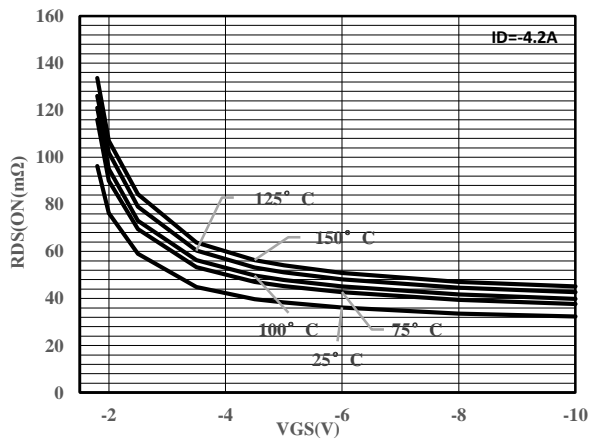
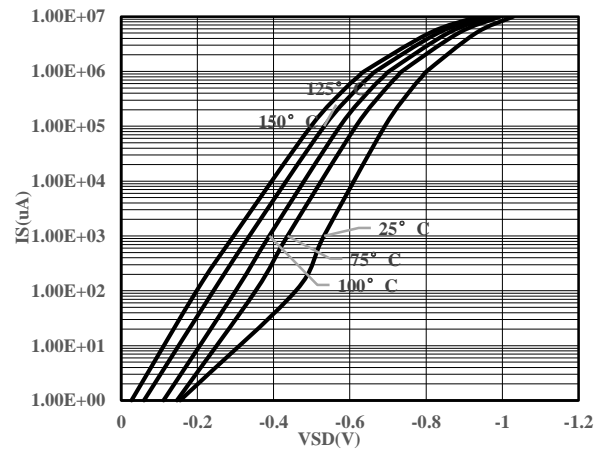
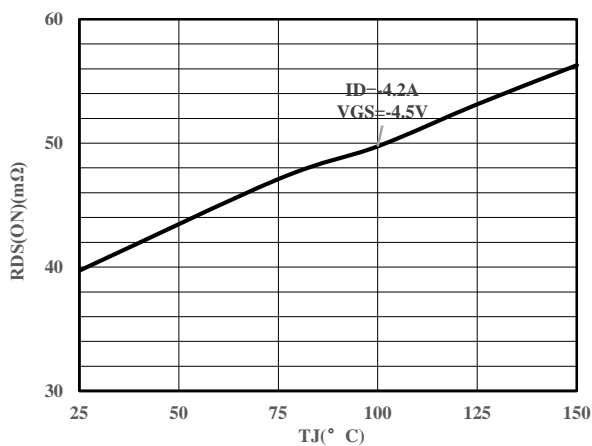
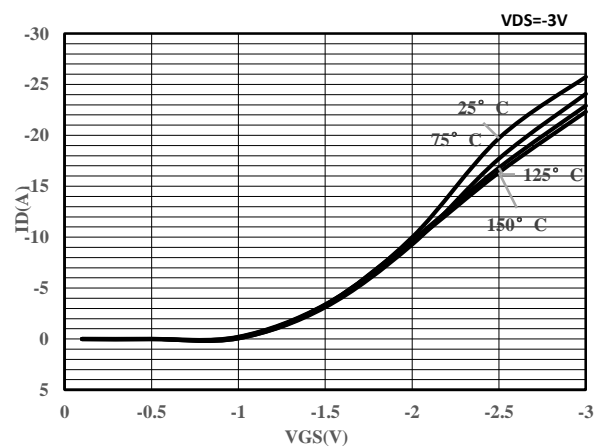
Parameter	Symbol	Value	Units
Drain-Source Voltage	$V_{DSS}$	-12	V
Gate -Source Voltage	$V_{GSS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	-4.2
		$T_A = 70^\circ C$	-3.4
Pulsed Drain current	$I_{DM}$	-10	A
Power Dissipation	$P_D$	0.35	W

### Thermal Characteristics

Parameter	Symbol	Limits	Unit
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	357	$^\circ C/W$
Thermal Resistance Junction to Lead	$R_{\theta JL}$	214	$^\circ C/W$
Thermal Resistance Junction to Case	$R_{\theta JC}$	175	$^\circ C/W$
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ C$

**Electrical Characteristics (@T<sub>A</sub>=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
<b>OFF Characteristics</b>						
V <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-12	-	-	V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =-12V, V <sub>GS</sub> =0V	-	-	-1	uA
I <sub>GSS</sub>	Gate-body Leakage	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>ON Characteristics</b>						
R <sub>DS(ON)</sub>	Static Drain-Source On-resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.5A	-	32	53	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.2A	-	40	65	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2A	-	55	100	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1A	-	79	250	
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.5	-	-0.9	V
<b>Dynamic Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-16V	-	12.3	-	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>GS</sub> =-4.5V	-	1.6	-	
Q <sub>gd</sub>	Gate-Drain Charge	I <sub>D</sub> =-4.2A	-	3.6	-	
C <sub>ISS</sub>	Input capacitance	V <sub>DS</sub> =-15V	-	1660	-	pF
C <sub>OSS</sub>	Output capacitance	V <sub>GS</sub> =0V	-	45	-	
C <sub>RSS</sub>	Reverse transfer capacitance	f=1.0MHz	-	105	-	
t <sub>D(ON)</sub>	Turn-On Delay Time	V <sub>DD</sub> = -15V, I <sub>D</sub> = -4.2A, R <sub>L</sub> = 3.6Ω, V <sub>GEN</sub> = -10V, R <sub>GEN</sub> = 6Ω	-	5.9	-	ns
t <sub>R</sub>	Rise Time		-	3.6	-	
t <sub>D(OFF)</sub>	Turn-Off Delay Time		-	32.4	-	
t <sub>F</sub>	Fall Time		-	2.6	-	
<b>Source-Drain Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-1.2A, V <sub>GS</sub> =0 V	-	-	-1.2	V
T <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =-4.2A, V <sub>GS</sub> =0	-	27.7	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=100A/us	-	22	-	nC

**Ratings and Characteristic Curves ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

**Fig.1- On-Region Characteristics**

**Fig.2- On-Resistance vs. Drain Current and Gate Voltage**

**Fig.3- On-Resistance vs. Gate-Source Voltage**

**Fig.4- Body-Diode Characteristics**

**Fig.5- On-Resistance vs. Junction Temperature**

**Fig.6- Transfer Characteristics**

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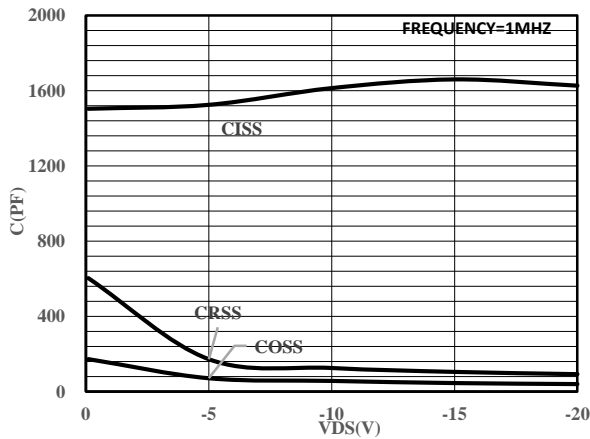


Fig.7-Capacitance Characteristics

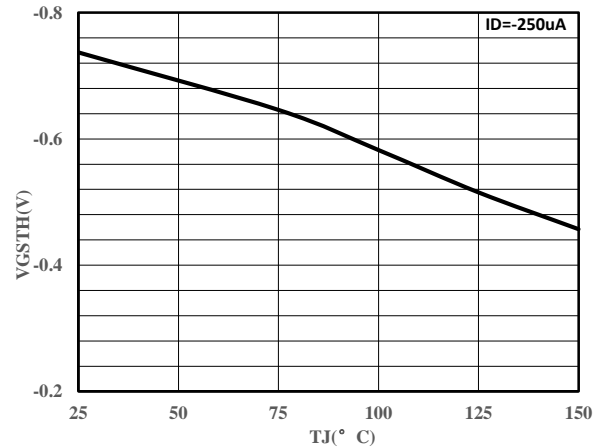


Fig.8- Gate Voltage vs. Junction Temperature

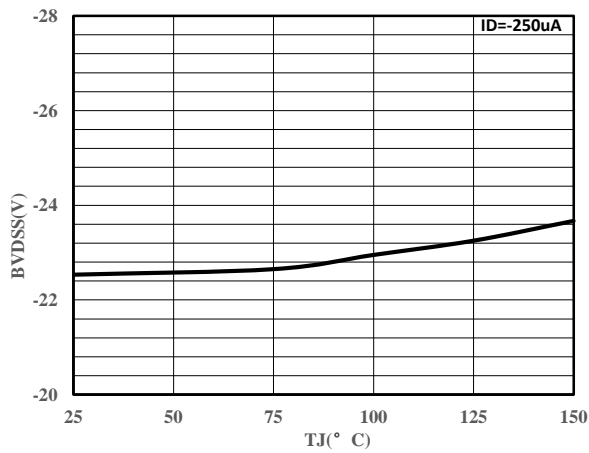
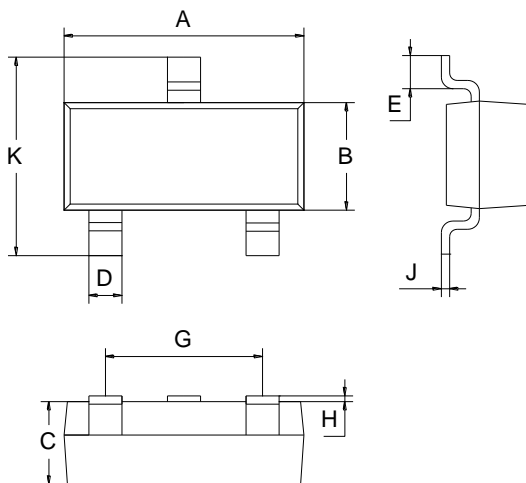


Fig.9- Drain-Source vs. Junction Temperature

## Package Outline Dimensions(unit:mm)

### SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

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