

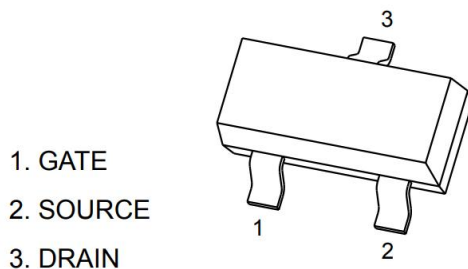
### Product Summary

- $V_{DS}$  -30 V
- $I_{DS}$  (at  $V_{GS}=-10V$ ) -4.2 A
- $R_{DS(ON)}$  (at  $V_{GS}=-10V$ )  $\leq 50m\Omega$ (Typ)

### Application

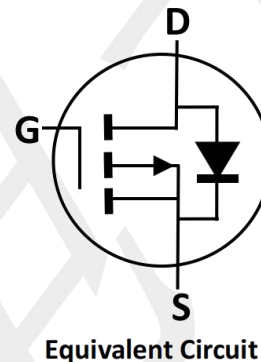
- Interfacing Switching
- Portable equipment and battery
- Load Switch

### Package and Pin Configuration



SOT23

### Circuit diagram



### 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	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	-4.2	A
Pulsed Drain Current (t = 100 $\mu$ s)	$I_{DM}$	-28	A
Maximum Power Dissipation	$P_D$	1.2	W
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ C$

### Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient(t $\leq$ 10s)	$R_{\theta JA}$	104	$^\circ C/W$

PCB Mount  
(Note)

Note : When mounted on 1" square PCB (FR4 material).

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> = -250μA	BV <sub>DSS</sub>	-30	--	--	V
Gate-Source Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	V <sub>GS(th)</sub>	-0.7	-1.0	-1.3	V
Gate-Source Leakage	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V	I <sub>GSS</sub>	--	--	±100	nA
Zero Gate Voltage Drain Current	V <sub>DS</sub> = -20V, V <sub>GS</sub> =0V	I <sub>DSS</sub>	--	-0.1	-1	μA
	V <sub>DS</sub> = -20V, T <sub>J</sub> =55°C		--	--	-10	μA
Drain-Source On-State Resistance (Note 1)	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.2A	R <sub>DS(on)</sub>	--	50	55	mΩ
	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A		--	65	75	
	V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1A		--	95	130	
Forward Transconductance (Note 2)	V <sub>DS</sub> = -5V, I <sub>D</sub> = -4.2A	g <sub>fs</sub>	--	10	--	S
<b>Dynamic</b> (Note 2)						
Total Gate Charge (Note 3)	V <sub>DS</sub> = -15V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V	Q <sub>g</sub>	--	9.5	--	nC
Gate-Source Charge (Note 3)		Q <sub>gs</sub>	--	2.0	--	
Gate-Drain Charge (Note 3)		Q <sub>gd</sub>	--	3.0	--	
Input Capacitance	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, F = 1.0MHz	C <sub>iss</sub>	--	950	--	pF
Output Capacitance		C <sub>oss</sub>	--	115	--	
Reverse Transfer Capacitance		C <sub>rss</sub>	--	75	--	
<b>Switching</b>						
Turn-On Delay Time (Note 3)	V <sub>DS</sub> = -15V, I <sub>D</sub> = -3.2A, V <sub>GS</sub> = -10V, R <sub>G</sub> = 6Ω	t <sub>d(on)</sub>	--	7	--	nS
Rise Time (Note 3)		t <sub>r</sub>	--	3	--	
Turn-Off Delay Time (Note 3)		t <sub>d(off)</sub>	--	30	--	
Fall Time (Note 3)		t <sub>f</sub>	--	12	--	
<b>Source-Drain Diode Ratings and Characteristics</b> (Note 2)						
Forward Voltage	V <sub>GS</sub> = 0V, I <sub>F</sub> = -1A	V <sub>SD</sub>	--	-0.8	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I <sub>S</sub>	--	--	-4.2	A
Pulsed Current (Note 1)		I <sub>SM</sub>	--	--	-28	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

**TYPICAL CHARACTERISTICS**

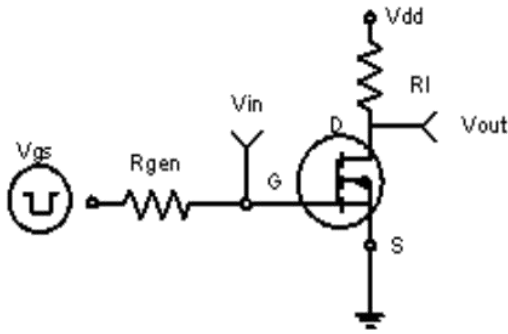


Figure 1: Switching Test Circuit

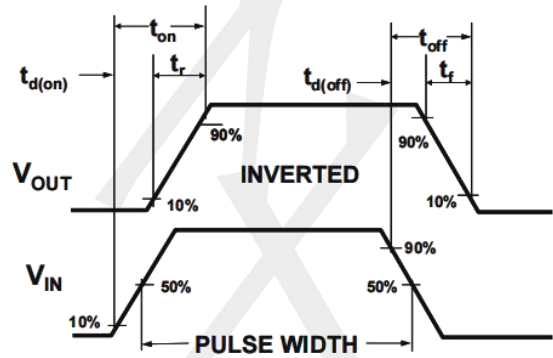
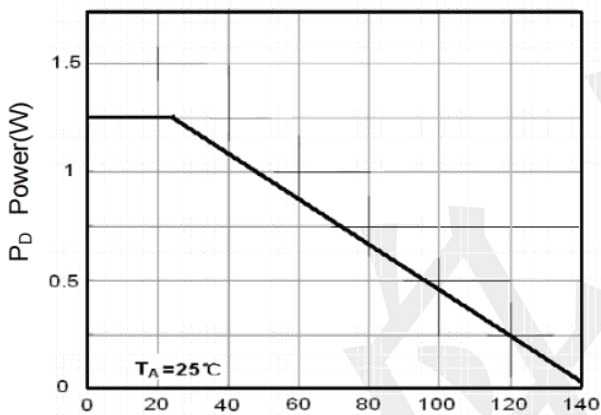
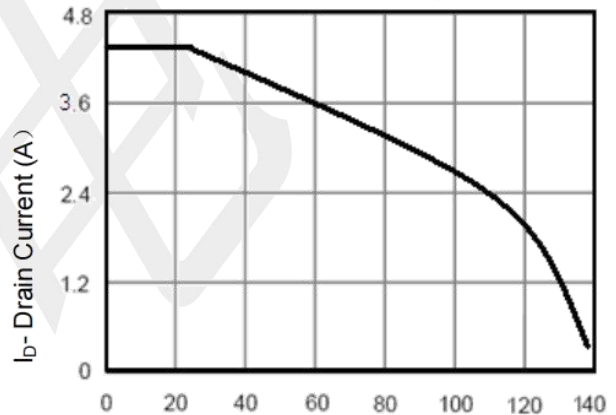


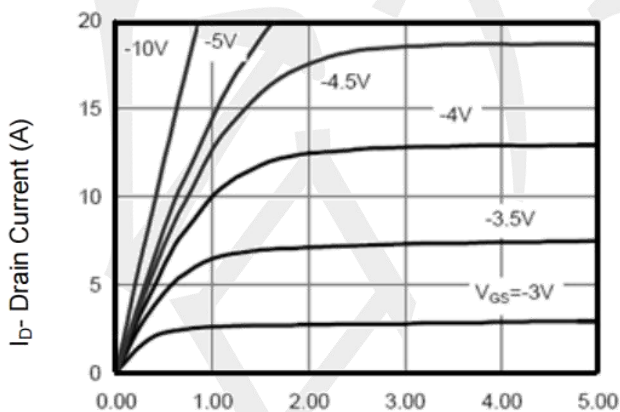
Figure 2: Switching Waveforms



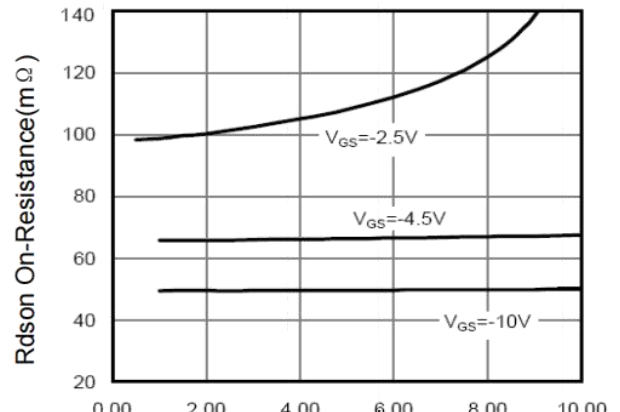
T<sub>J</sub>-Junction Temperature(°C)  
Figure 3 Power Dissipation



T<sub>J</sub>-Junction Temperature(°C)  
Figure 4 Drain Current



V<sub>ds</sub> Drain-Source Voltage (V)  
Figure 5 Output Characteristics



I<sub>D</sub>- Drain Current (A)  
Figure 6 Drain-Source On-Resistance

**TYPICAL CHARACTERISTICS**

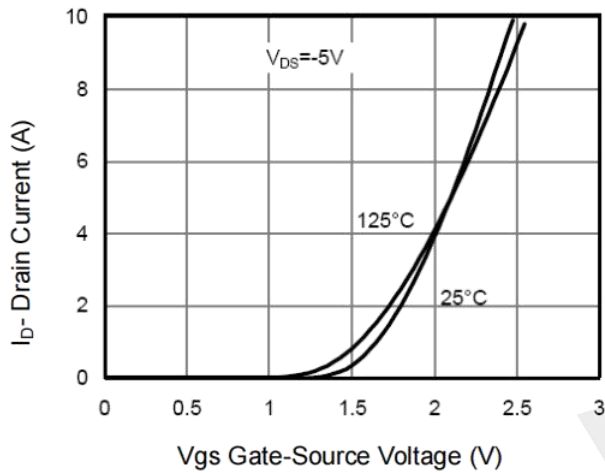


Figure 7 Transfer Characteristics

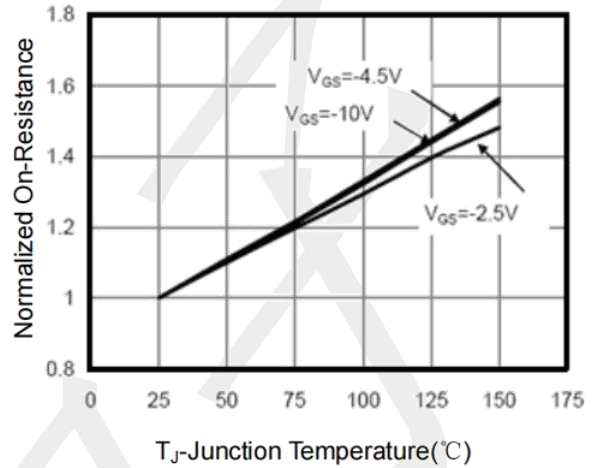


Figure 8 Drain-Source On-Resistance

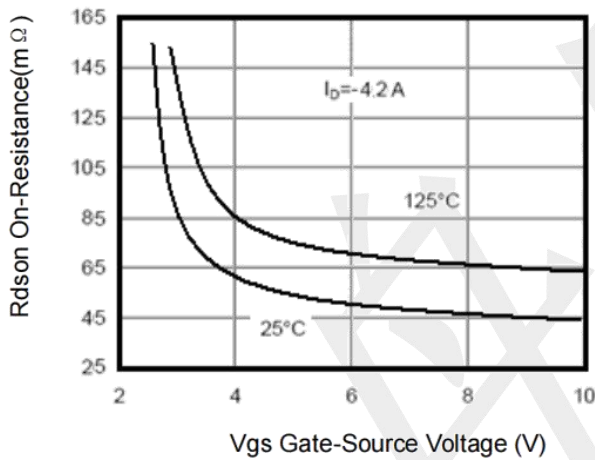


Figure 9  $R_{DS(on)}$  vs  $V_{GS}$

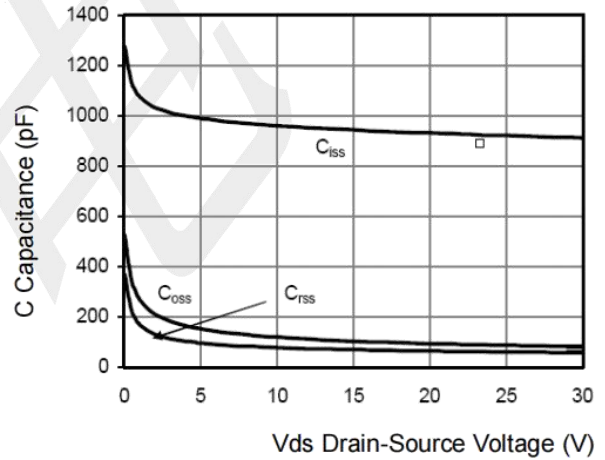


Figure 10 Capacitance vs  $V_{DS}$

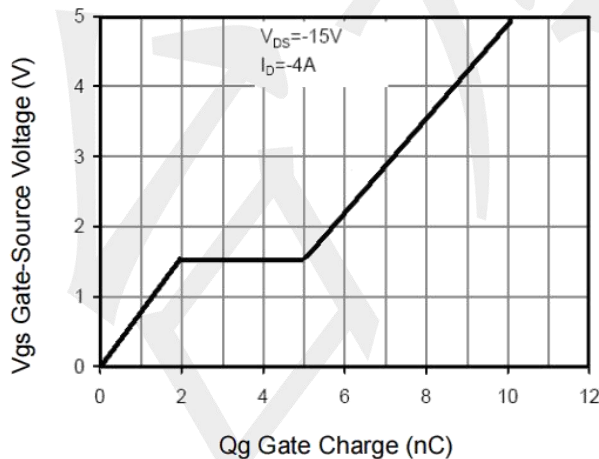


Figure 11 Gate Charge

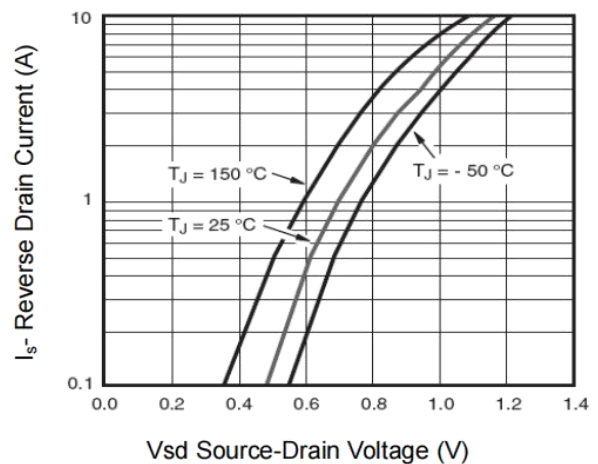
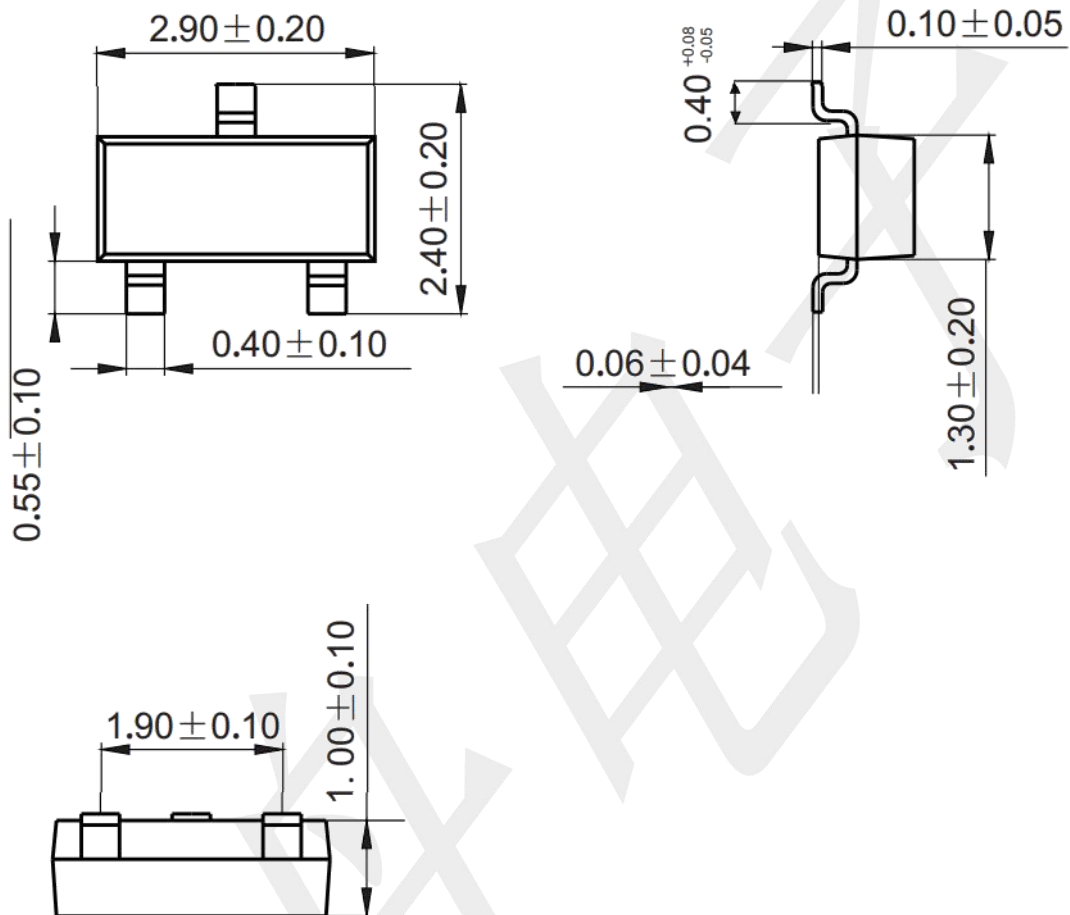


Figure 12 Source-Drain Diode Forward

**Package Outline Dimensions (unit: mm)**

SOT-23



**Mounting Pad Layout (unit: mm)**

