

Description

This-30V -4.2A P-Channel MOSFET in a SOT-23-6 Plastic Package.

Applications

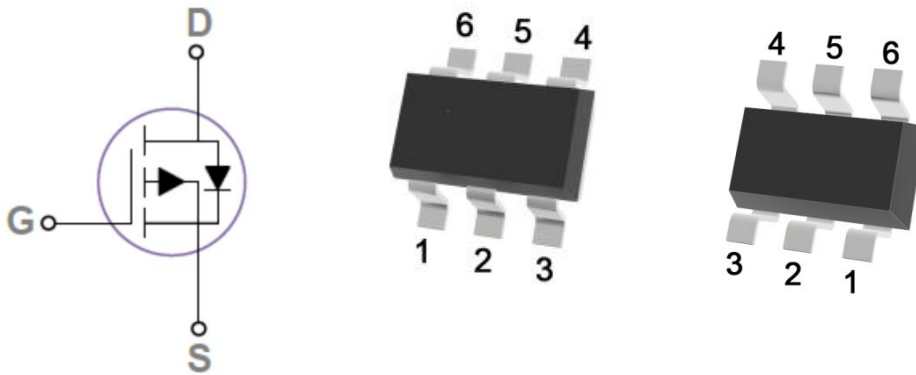
This device is suitable for use as a load switch or in PWM applications.

Features

- $V_{DS}(V) = -30V$
- $I_D = -4.2A (V_{GS} = -10V)$
- $R_{DS(ON)} < 50m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 65m\Omega (V_{GS} = -4.5V)$

V_{DSS}	$R_{DS(on)}$ Typ	I_D
-30V	37m Ω	-4.2A

Equivalent Circuit & Pinning



PIN1 , PIN 2 , PIN 5 , PIN 6 : Drain

PIN 3 : Gate

PIN 4 : Source

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current – Continuous	$I_D(T_a=25^{\circ}\text{C})$	-4.2	A
Drain Current- Continuous ^A	$I_D(T_a=70^{\circ}\text{C})$	-3.5	A
Pulsed Drain Current ^B	I_{DM}	-30	A
Gate-Source Voltage	V_{GS}	±12	V
Maximum Power Dissipation ^A	$P_D(T_a=25^{\circ}\text{C})$	1.4	W
Total Power Dissipation ^A	$P_D(T_a=70^{\circ}\text{C})$	1.0	W
Maximum Junction-to-Ambient ^(Note 1)	$R_{\theta JA}$	125	℃/ W
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	60	℃/W
Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ 150	℃

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V \quad I_D=-250\mu A$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24V \quad V_{GS}=0V$ $T_j=25^{\circ}\text{C}$			-1	μA
		$V_{DS}=-24V \quad V_{GS}=0V$ $T_j=55^{\circ}\text{C}$			-5	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V \quad V_{DS}=0V$			±0.1	uA
On-State Drain Current	$I_{D(on)}$	$V_{GS}=-4.5V \quad V_{DS}=-5V$	-25			A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS} \quad I_D=-250\mu A$	-1.0		-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V \quad I_D=-4.2A$		37	50	mΩ
	$R_{DS(on)}$	$V_{GS}=-10V \quad I_D=-4.2A$ $T_j=125^{\circ}\text{C}$			75	
	$R_{DS(on)}$	$V_{GS}=-4.5V \quad I_D=-4A$		58	65	
Forward Transconductance	g_{FS}	$V_{DS}=-5V \quad I_D=-5A$	7	11		S
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V \quad I_S=-1A$		-0.75	-1.0	V

Electrical Characteristic Curve

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=-15V \quad V_{GS}=0V$ $f=1MHz$		957		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	$V_{GS}=0V \quad V_{DS}=0V$, $f=1MHz$		6		Ω
Total Gate Charge	Q_g	$V_{GS}=-4.5V \quad V_{DS}=-15V$ $I_D=-4A$		9.4		nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			3		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V \quad R_L=3.6\Omega$ $V_{DS}=-15V$ $R_{GEN}=6\Omega$		6.3		ns
Turn-On Rise Time	t_r			3.2		
Turn-Off Delay Time	$t_{d(off)}$			38.2		
Turn-Off Fall Time	t_f			12		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-4A, dI/dt=100A/\mu s$		20.2		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-4A, dI/dt=100A/\mu s$		11.2		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10s$ thermal resistance rating.

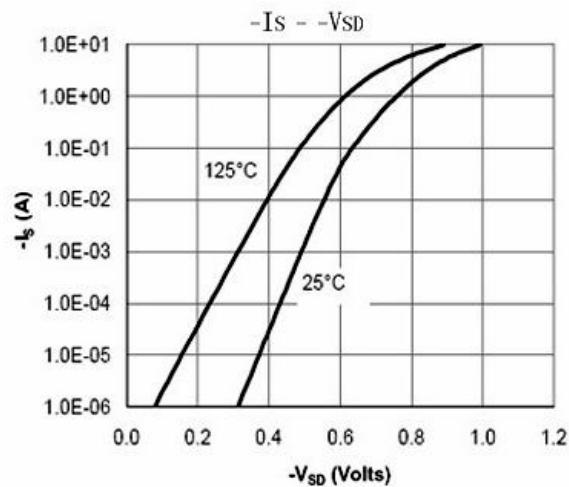
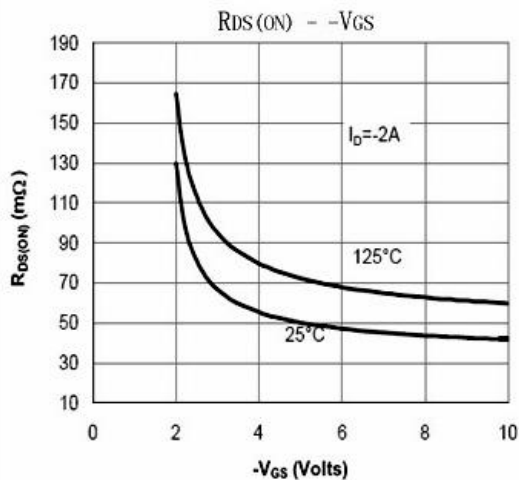
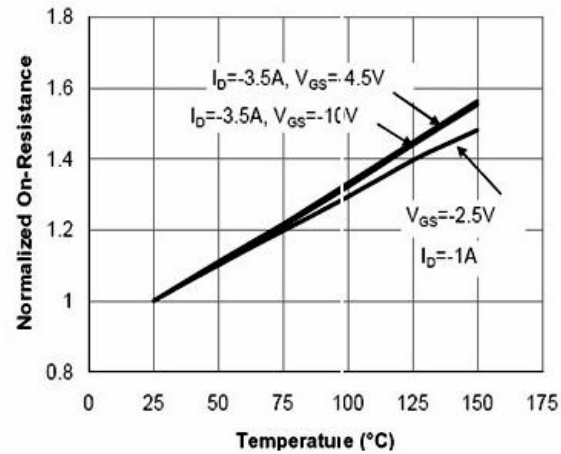
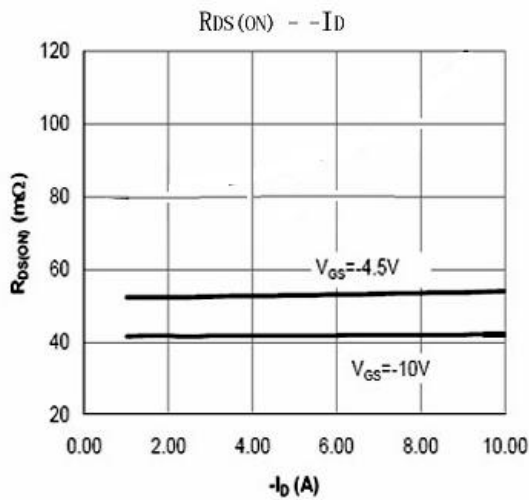
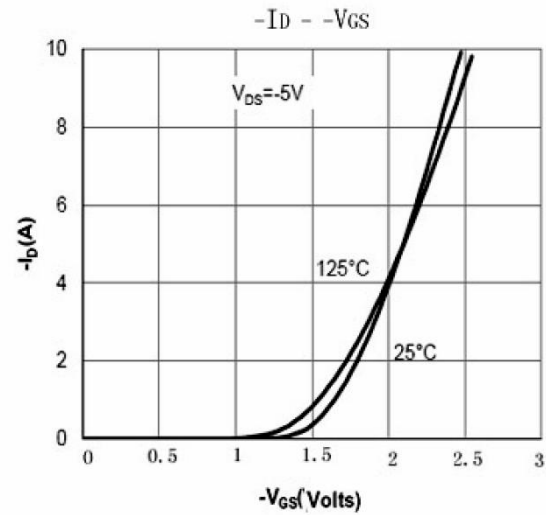
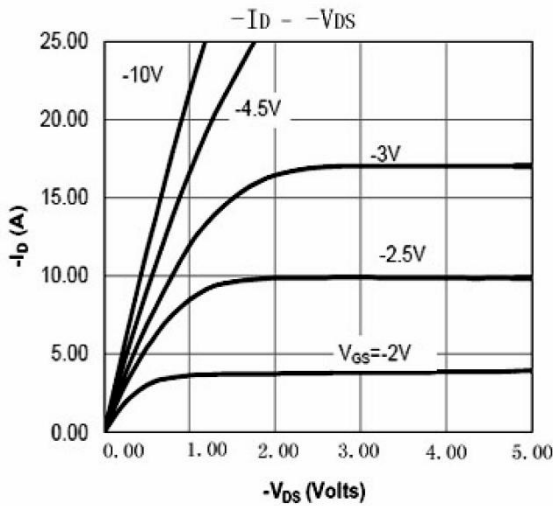
B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

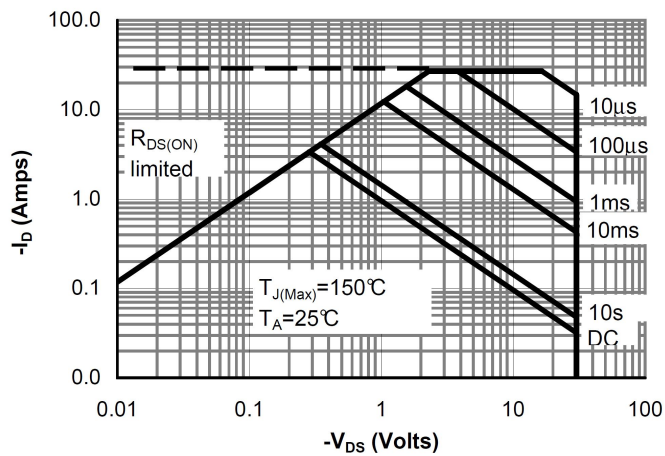
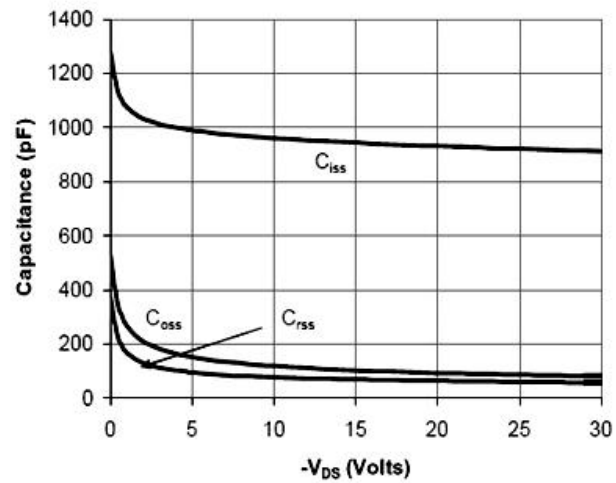
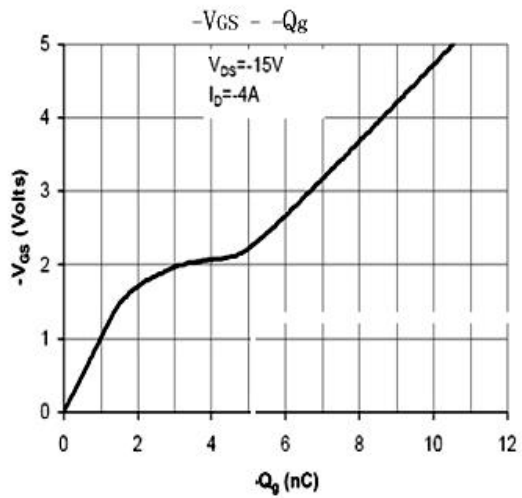
D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The SOA curve provides a single pulse rating.

Electrical Characteristic Curve



Electrical Characteristic Curve



Marking Instructions



Note:

3411: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT23-6	3,000	10	30,000	4	120,000	7" x8	210×205×205	445×230×435

Package Outline Dimensions

