Descriptions

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

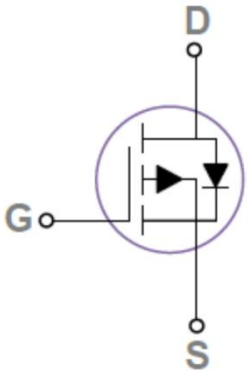
Features

- V_{DS}(V)=-30V
- I_D=-4.2A(V_{GS}=-10V)
- RDS(ON)<50mΩ(VGS=-10V)
- RDS(ON)<65mΩ(VGS=-4.5V)

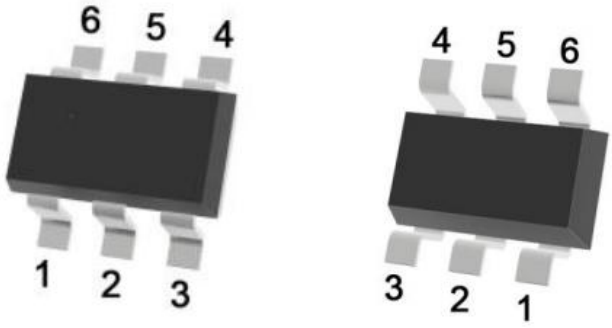
Applications

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

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_{DSS}	-30	V
Drain Current – Continuous	I_D(T_a=25℃)	-4.2	A
Drain Current- Continuous [A]	I_D(T_a=70℃)	-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℃)	1.4	W
Total Power Dissipation [A]	P_D(T_a=70℃)	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℃)

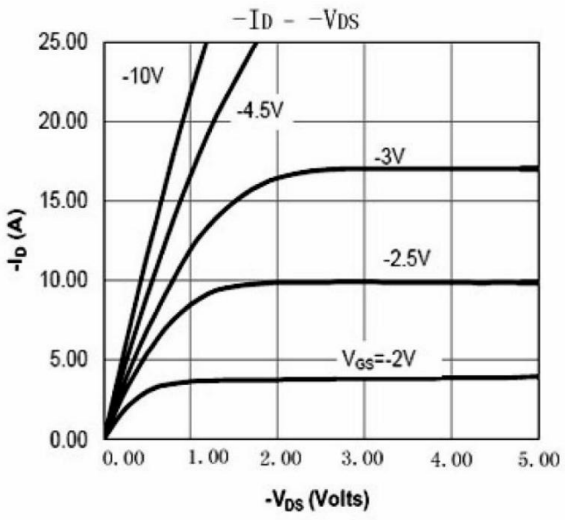
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V I_D=-250μA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V V_{GS}=0V T_j=25℃			-1	μA
		V_{DS}=- 24V V_{GS}=0V T_j=55℃			-5	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±12V V_{DS}=0V			±0.1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

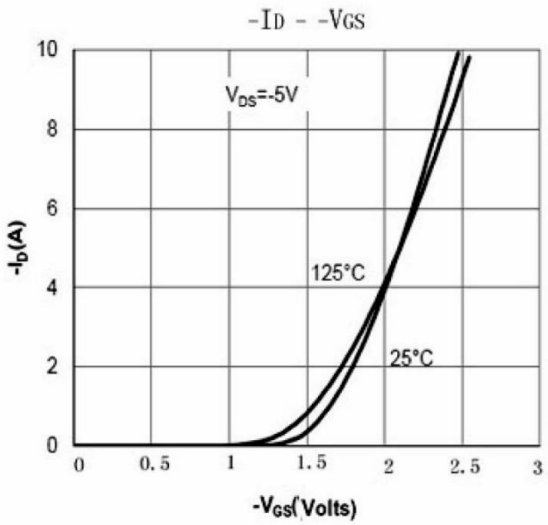
Electrical Characteristics(Ta=25℃)

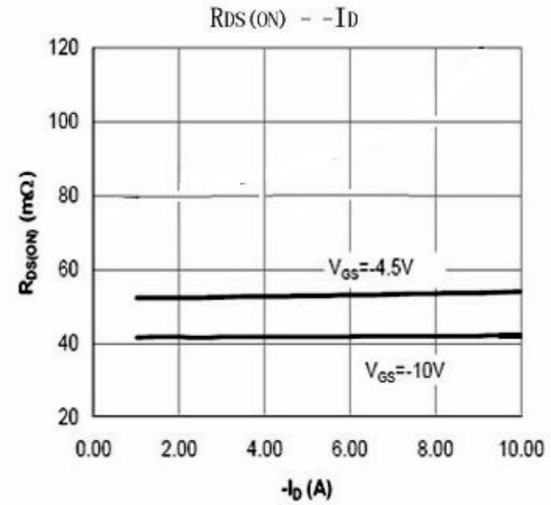
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=-15V V_{GS}=0V f=1MHz		957		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V, f=1MHz		6		Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V V_{DS}=-15V I_D=-4A		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 R_L=3.6Ω V_{DS}=-15V R_{GEN}=6Ω		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/μs		20.2		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=-4A, dI/dt=100A/μs		11.2		nC

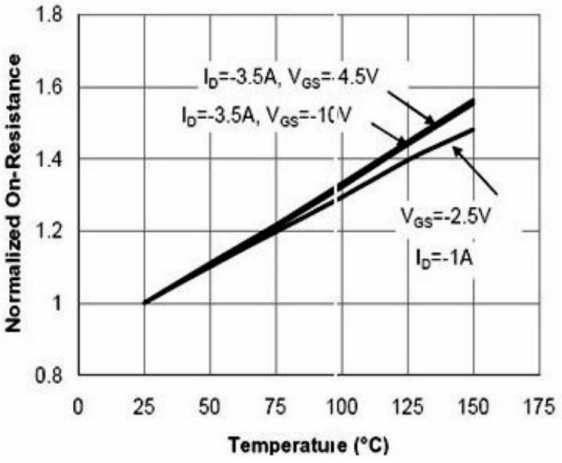
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.
B: Repetitive rating, pulse width limited by junction temperature.
C. The $R_{\theta JA}$ is the sum of the thermal impedence 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 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

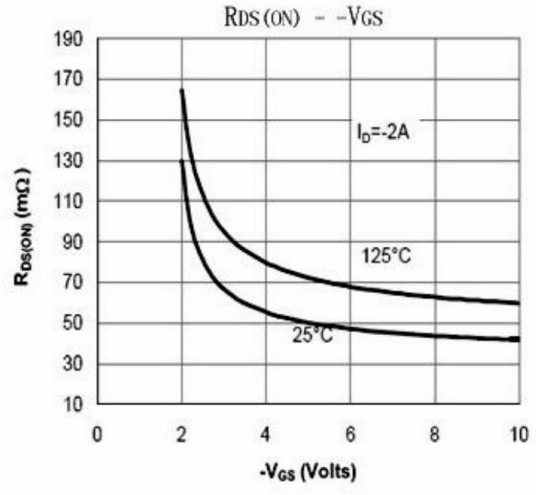
Electrical Characteristic Curve

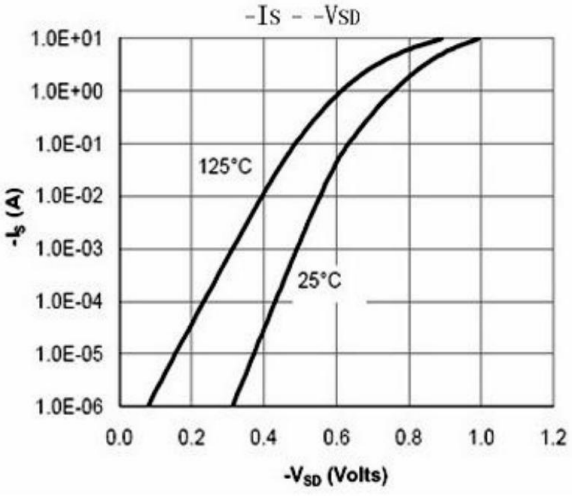




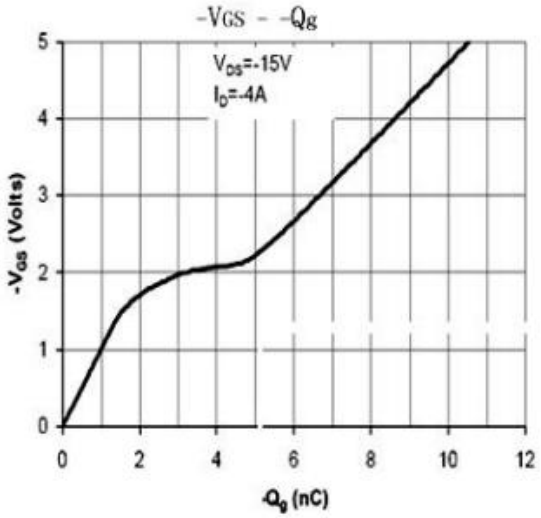


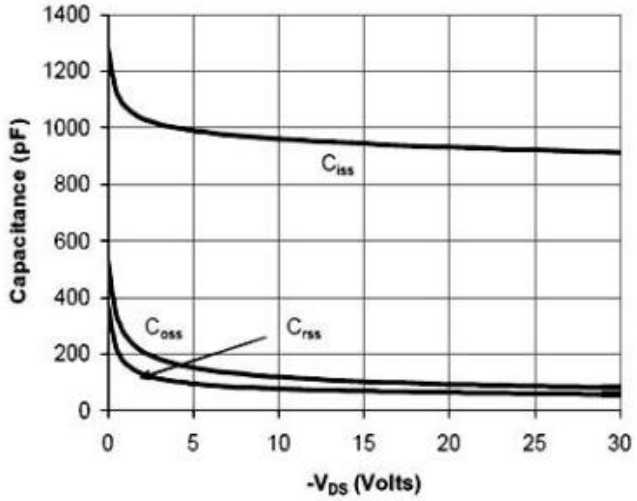


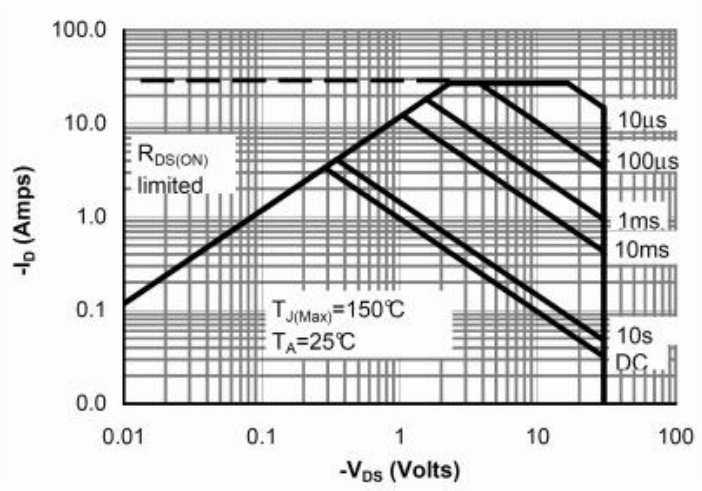




Electrical Characteristic Curve







Marking Instructions

Note:

3411: Product Type.

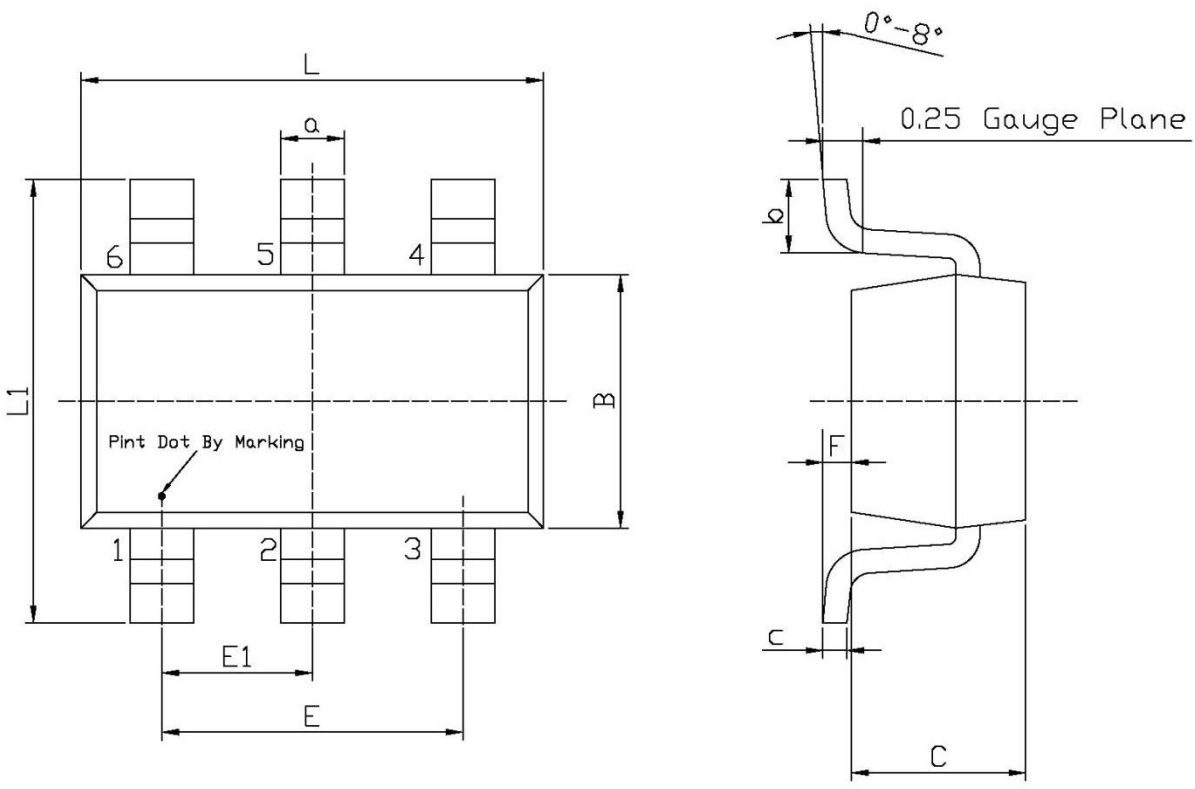
****: Lot No. Code, code change with Lot No.

Packaging SPEC

REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	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″ ×8	210×205×205	445×230×435

Package Outline Dimensions



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	E1	0.85	1.05
B	1.50	1.70	a	0.35	0.50
C	0.90	1.30	c	0.10	0.20
L1	2.60	3.00	b	0.35	0.55
E	1.80	2.00	F	0	0.15

SOT23-6