General Features

- Vds=30V Id=6A
- $R_{DS(ON)}$ < 23mΩ , V_{GS}@10V,
- $R_{DS(ON)}$ < 32mΩ, V_{GS}@4.5V,

Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration

SOT23-6

Marking Information

P: Logo
XXXX: Marking ID
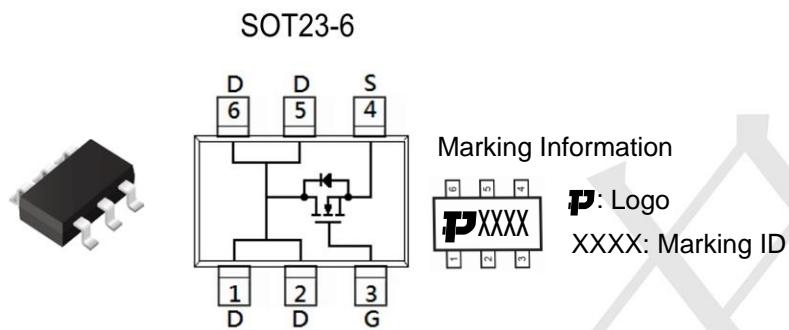
Block Diagram
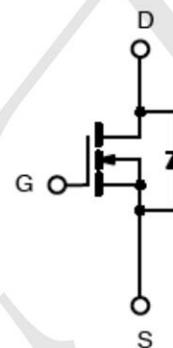
Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current [Note 4]		I_D	6	A
Pulsed Drain Current [Note 1]		I_{DM}	25	
Power Dissipation	T_a=25°C	P_D	2	W
	Derate above 25°C		16	mW/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance - Junction to Ambient [Note 3]		$R_{θJA}$	62.5	°C/W

| Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V$, $I_D = 250\mu A$	BV_{DSS}	30	--	--	V
Drain-Source On-State Resistance	$V_{GS} = 10V$, $I_D = 6A$	$R_{DS(on)}$	--	18	23	mΩ
	$V_{GS} = 4.5V$, $I_D = 4A$		--	22	32	
Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	$V_{GS(TH)}$	1.0	1.5	2.5	V
Zero Gate Voltage Drain Current	$V_{DS} = 30V$, $V_{GS} = 0V$	I_{DSS}	--	--	1	μA
	$V_{DS} = 24V$, $T_J = 125°C$		--	--	10	
Gate Body Leakage	$V_{GS} = \pm 20V$, $V_{DS} = 0V$	I_{GSS}	--	--	± 100	μA
Forward Transconductance [Note 3]	$V_{DS} = 10V$, $I_D = 4A$	g_{fs}	--	6.5	--	S
Dynamic						
Total Gate Charge [Note 3,4]	$V_{DS} = 15V$, $I_D = 6A$, $V_{GS} = 4.5V$	Q_g	--	4.1	--	nC
Gate-Source Charge [Note 3,4]		Q_{gs}	--	1	--	
Gate-Drain Charge [Note 3,4]		Q_{gd}	--	2.1	--	
Input Capacitance	$V_{DS} = 25V$, $V_{GS} = 0V$, f = 1.0MHz	C_{iss}	--	345	--	pF
Output Capacitance		C_{oss}	--	55	--	
Reverse Transfer Capacitance		C_{rss}	--	32	--	
Switching						
Turn-On Delay Time [Note 3,4]	$V_{DD} = 15V$, $I_D = 1A$, $V_{GS} = 10V$, $R_G = 6\Omega$	$t_{d(on)}$	--	2.8	--	ns
Turn-On Rise Time [Note 3,4]		t_r	--	7.2	--	
Turn-Off Delay Time [Note 3,4]		$t_{d(off)}$	--	15.8	--	
Turn-Off Fall Time [Note 3,4]		t_f	--	4.6	--	
Source-Drain Diode Ratings and Characteristic						
Maximum Continuous Drain-Source Diode Forward Current	Integral reverse diode in the MOSFET	I_S	--	--	6	A
Maximum Pulse Drain-Source Diode Forward Current		I_{SM}	--	--	25	A
Diode-Source Forward Voltage	$V_{GS} = 0V$, $I_S = 1A$	V_{SD}	--	--	1	V

Note:

1. Pulse width limited by safe operating area
2. L = 1mH, $I_{AS} = 8A$, $V_{DD} = 25V$, $R_G = 25\Omega$, Starting $T_J = 25°C$
3. Pulse test: pulse width $\leq$ 300μs, duty cycle $\leq$ 2%
4. Switching time is essentially independent of operating temperature.

# Typical Electrical and Thermal Characteristics (Curves)

Continuous Drain Current vs. T_C
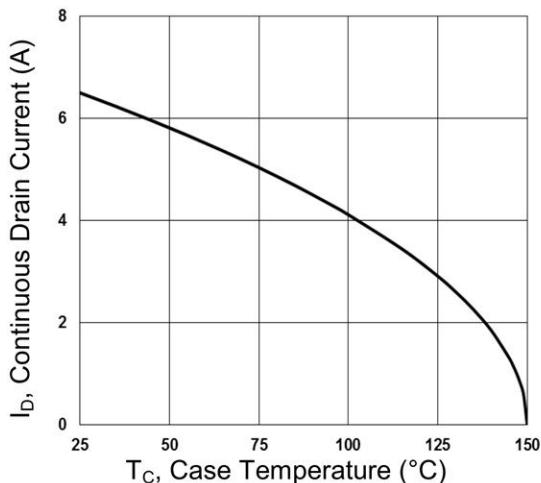
Gate Charge
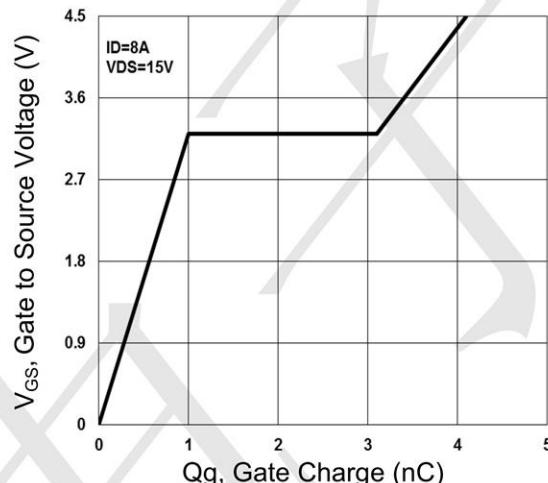
On-Resistance vs. Junction Temperature
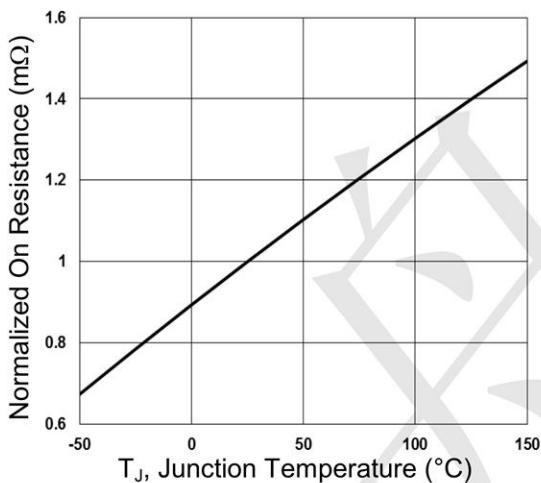
Threshold Voltage vs. Junction Temperature
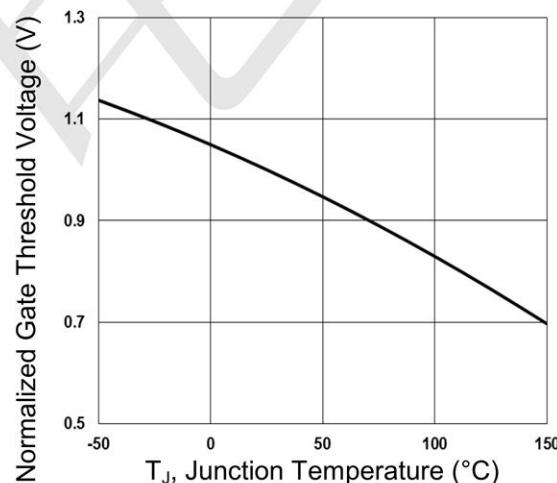
Maximum Safe Operating Area
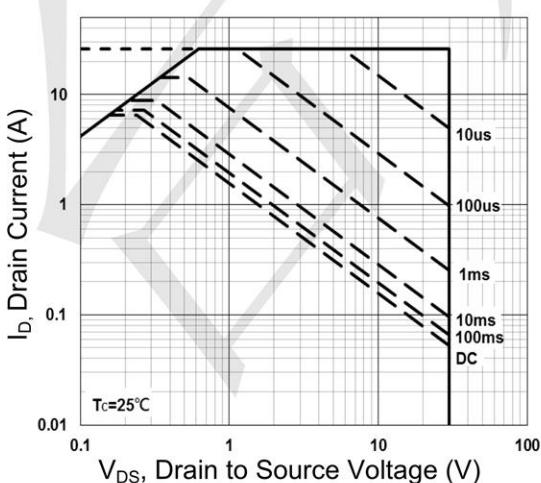
### Normalized Thermal Transient Impedance Curve
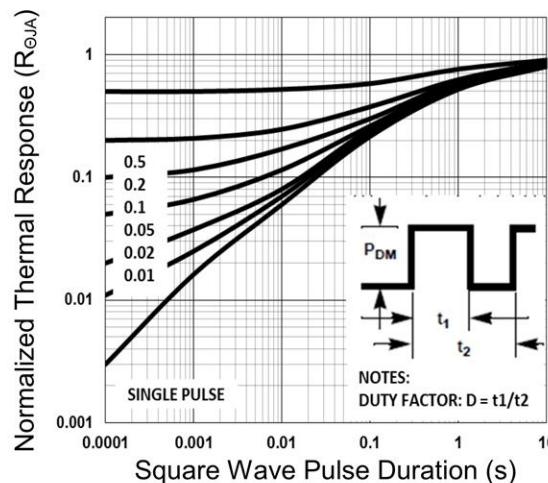
SOT23-6 Package Information
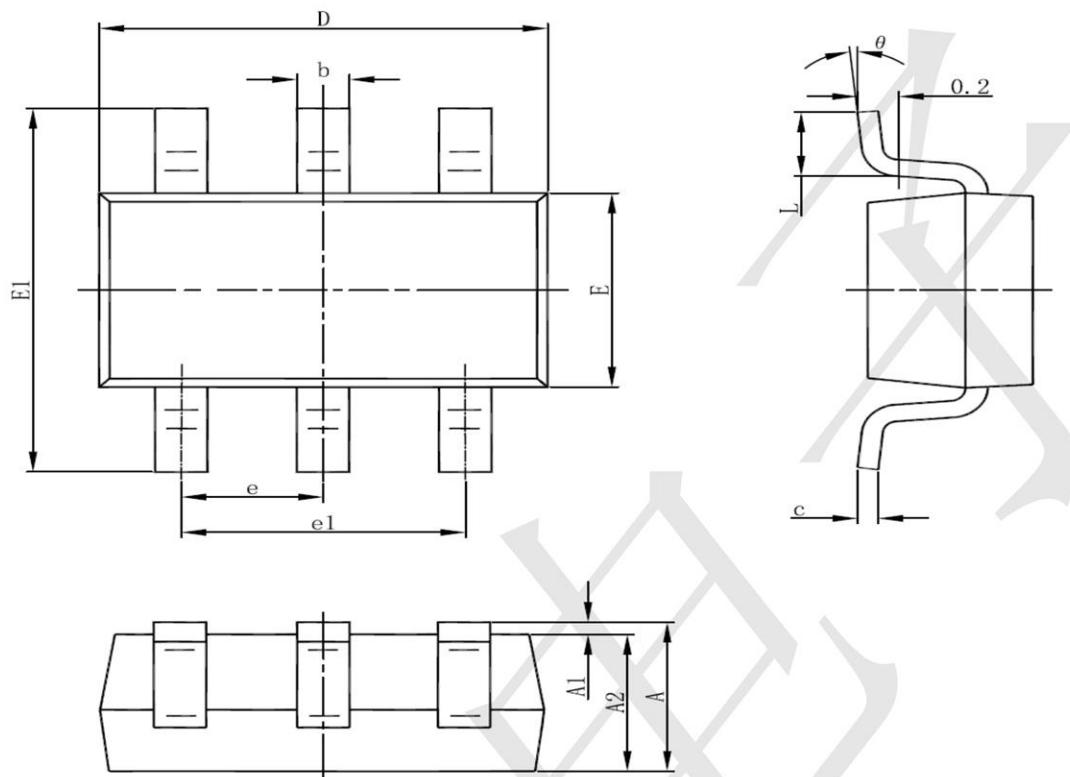
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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