

### FEATURES

V <sub>DSS</sub>	R <sub>DS(on)</sub> Typ	I <sub>D</sub> Max
N-Channel 60 V	1.5 Ω @ 10 V	500 mA
	2.0 Ω @ 4.5 V	250 mA
P-Channel -60 V	2.5 Ω @ 10 V	500 mA
	3.0 Ω @ 4.5 V	200 mA

### APPLICATIONS

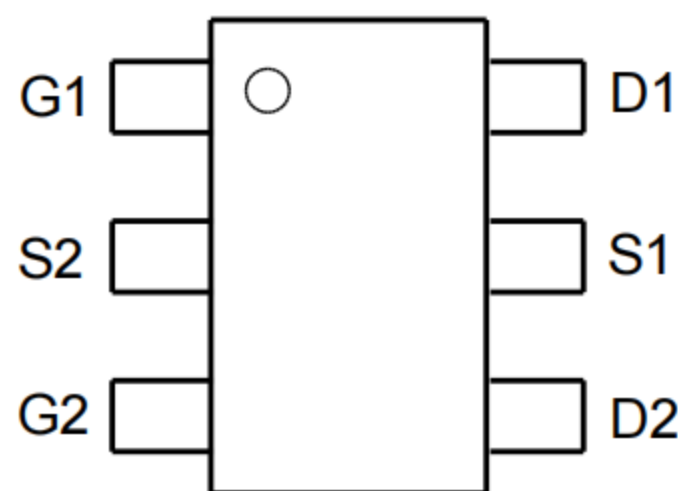
- Replace Digital Transistor, Level-Shifter
- Power Supply Converter Circuits
- Battery Operated Systems

### Ordering Information

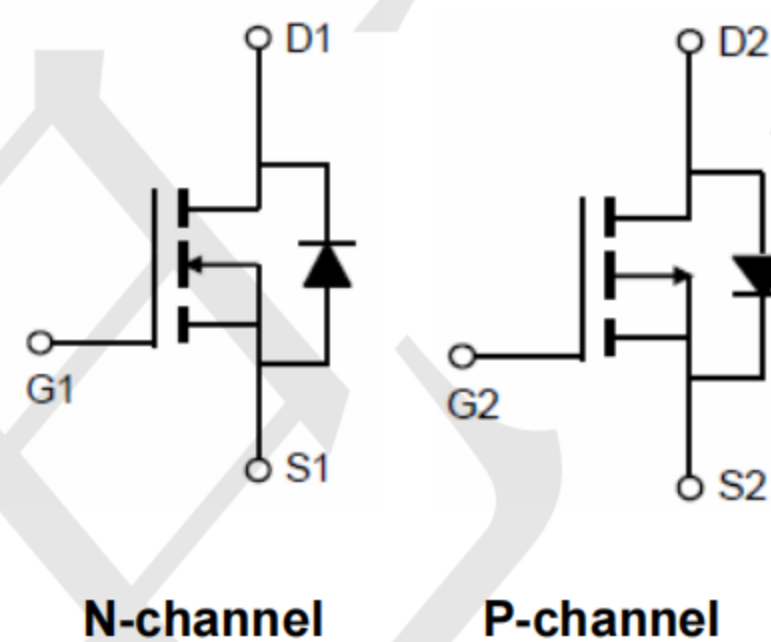
- Case: SOT23-6
- Shipping Qty: 3000/7inch Tape & Reel

### Package and Pin Configuration

#### SOT23-6



#### Circuit diagram



### Marking: 01CK

### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

TECH PUBLIC PARAMETER		SYMBOL	N-Ch	P-Ch	UNITS
Drain-Source Voltage		V <sub>DS</sub>	60	-60	V
Gate-Source Voltage		V <sub>GS</sub>	+20	+20	V
Continuous Drain Current		I <sub>D</sub>	500	-350	mA
Pulsed Drain Current (Note 4)		I <sub>DM</sub>	1500	-1000	mA
Power Dissipation	T <sub>a</sub> =25°C	P <sub>D</sub>	950		mW
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150		°C
Typical Thermal resistance - Junction to Ambient (Note 3)		R <sub>θJA</sub>	417		°C/W

**N-Channel Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

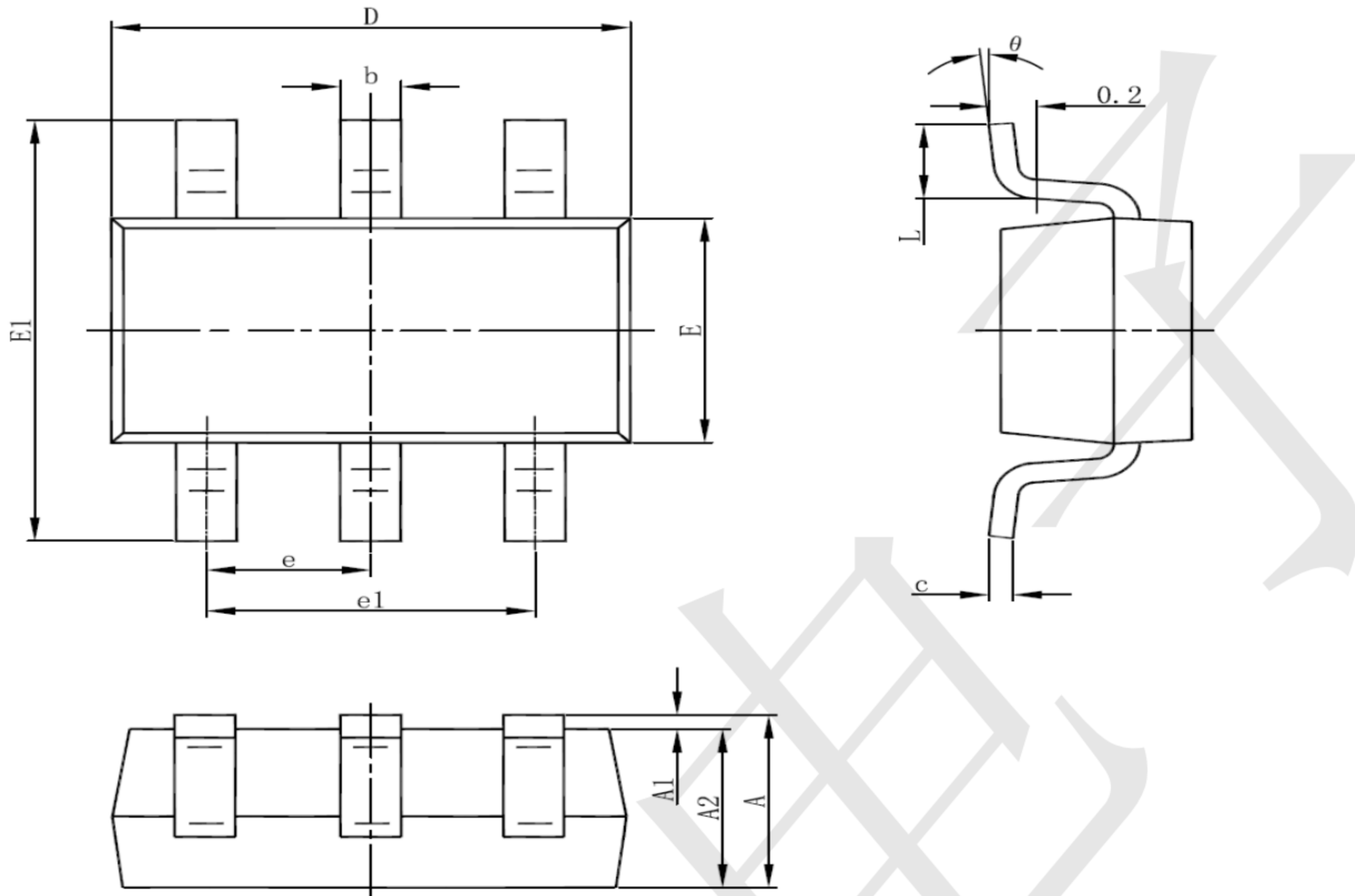
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=500mA$	-	1.5	2.0	$\Omega$
		$V_{GS}=4.5V, I_D=250mA$	-	2.0	3.0	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=25V, I_D=500mA,$ $V_{GS}=4.5V$	-	0.95	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.34	-	
Gate-Drain Charge	$Q_{gd}$		-	0.32	-	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	36	-	pF
Output Capacitance	$C_{oss}$		-	11	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6.6	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=25V, I_D=500mA,$ $V_{GS}=10V,$ $R_G=6\Omega$ (Note 1,2)	-	2.3	-	ns
Turn-On Rise Time	$t_r$		-	20	-	
Turn-Off Delay Time	$t_{d(off)}$		-	7	-	
Turn-Off Fall Time	$t_f$		-	20	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	500	mA
Diode Forward Voltage	$V_{SD}$	$I_S=150mA, V_{GS}=0V$	-	0.9	1.5	V

### P-Channel Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-500mA$	-	2.5	6	$\Omega$
		$V_{GS}=-4.5V, I_D=-200mA$	-	3.0	7	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-48V, V_{GS}=0V$	-	-	-1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>Dynamic</b> (Note 5)						
Total Gate Charge	$Q_g$	$V_{DS}=-25V, I_D=-100mA,$ $V_{GS}=-4.5V$	-	1.1	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.3	-	
Gate-Drain Charge	$Q_{gd}$		-	0.2	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V,$ $f=1.0MHz$	-	51	-	$\mu F$
Output Capacitance	$C_{oss}$		-	15	-	
Reverse Transfer Capacitance	$C_{rss}$		-	2.2	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-25V, I_D=-100mA,$ $V_{GS}=-10V,$ $R_G=6\Omega$ (Note 1,2)	-	4.8	-	ns
Turn-On Rise Time	$t_r$		-	19	-	
Turn-Off Delay Time	$t_{d(off)}$		-	52	-	
Turn-Off Fall Time	$t_f$		-	32	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	-350	mA
Diode Forward Voltage	$V_{SD}$	$I_S=-500mA, V_{GS}=0V$	-	-0.9	-1.5	V



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
$\theta$	0°	8°	0°	8°

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