

RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## FEATURES

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

## APPLICATION

- Battery Switch
- DC/DC Converter

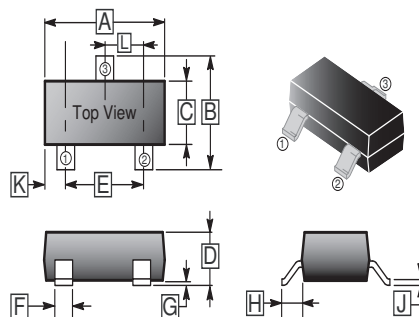
## MARKING

S10

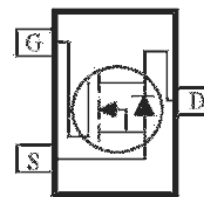
## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7' inch

## SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.04	G	-	0.18
B	2.10	2.80	H	0.40	0.60
C	1.20	1.60	J	0.08	0.20
D	0.89	1.40	K	0.6	REF.
E	1.78	2.04	L	0.85	1.15
F	0.30	0.50			



Top View

## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Continuous Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	3	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	10	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance, Junction to Ambient <sup>2</sup>	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>STATIC CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-	-	V	$V_{GS} = 0, I_D = 250\mu\text{A}$
Gate-Body Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{GS} = 0, V_{DS} = 60\text{V}$
Gate Threshold Voltage <sup>3</sup>	$V_{GS(th)}$	0.5	-	2	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On Resistance <sup>3</sup>	$R_{DS(ON)}$	-	-	105	m $\Omega$	$V_{GS} = 10\text{V}, I_D = 3\text{A}$
		-	-	125		$V_{GS} = 4.5\text{V}, I_D = 3\text{A}$
Forward Transconductance <sup>3</sup>	$g_{FS}$	1.4	-	-	S	$V_{DS} = 15\text{V}, I_D = 2\text{A}$
Body diode forward voltage <sup>3</sup>	$V_{SD}$	-	-	1.2	V	$V_{GS} = 0, I_S = 3\text{A}$
<b>Dynamic Characteristics<sup>4</sup></b>						
Input Capacitance	$C_{iss}$	-	247	-	pF	$V_{DS} = 30\text{V},$ $V_{GS} = 0,$ $f = 1\text{MHz}$
Output Capacitance	$C_{oss}$	-	34	-		
Reverse Transfer Capacitance	$C_{rss}$	-	19.5	-		
<b>Switching Characteristics<sup>4</sup></b>						
Turn-On Delay Time	$t_{d(ON)}$	-	6	-	nS	$V_{DD} = 30\text{V},$ $V_{GS} = 10\text{V},$ $I_D = 1.5\text{A},$ $R_{GEN} = 1\Omega,$
Rise time	$t_r$	-	15	-		
Turn-Off Delay Time	$t_{d(OFF)}$	-	15	-		
Fall time	$t_f$	-	10	-		
Total Gate Charge	$Q_g$	-	6	-	nC	$I_D = 3\text{A}$ $V_{DS} = 30\text{V}$ $V_{GS} = 4.5\text{V}$
Gate-Source Charge	$Q_{gs}$	-	1	-		
Gate-Drain Charge	$Q_{gd}$	-	1.3	-		

Notes:

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board ,  $t \leq 10\text{s}$ .
3. Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$ .
4. Guaranteed by design, not subject to producing.

**CHARACTERISTIC CURVES**

