

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

## DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low R<sub>DS(on)</sub> and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, and PCMCIA cards, cellular and cordless telephones.

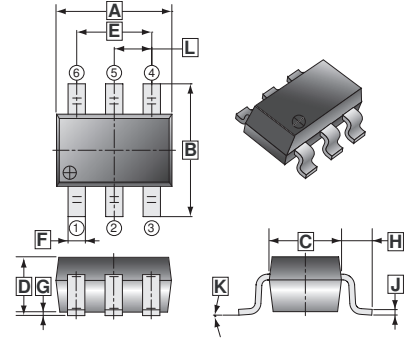
## FEATURES

- Low on-resistance
- Low drive current
- Low R<sub>DS(on)</sub> Provides Higher Efficiency and Extends Battery Life
- Fast switching speed
- High performance trench technology

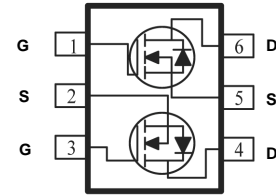
## PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

### TSOP-6



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.10	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.30	0.50			



## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±8	V
Continuous Drain Current <sup>1</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	4.1
		T <sub>A</sub> = 70°C	3.3
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	8	A
Continuous Source Current (Diode Conduction) <sup>1</sup>	I <sub>S</sub>	1.05	A
Power Dissipation <sup>1</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	1.15
		T <sub>A</sub> = 70°C	0.7
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
<b>Thermal Resistance Rating</b>			
Maximum Junction to Ambient <sup>1</sup>	R <sub>θJA</sub>	t ≤ 10 sec	110
		Steady State	150

Notes:

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	0.4	-	-	V	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=0$ , $V_{GS}=8\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	0.1	$\mu\text{A}$	$V_{DS}=16\text{V}$ , $V_{GS}=0$
		-	-	1		$V_{DS}=16\text{V}$ , $V_{GS}=0$ , $T_J=55^\circ\text{C}$
On-State Drain Current <sup>1</sup>	$I_{D(on)}$	30	-	-	A	$V_{DS}=5\text{V}$ , $V_{GS}=4.5\text{V}$
Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	47	m $\Omega$	$V_{GS}=4.5\text{V}$ , $I_D=4.1\text{A}$
		-	-	55		$V_{GS}=2.5\text{V}$ , $I_D=3.8\text{A}$
Forward Transconductance <sup>1</sup>	$g_{fs}$	-	10	-	S	$V_{DS}=10\text{V}$ , $I_D=4.1\text{A}$
Diode Forward Voltage	$V_{SD}$	-	0.8	-	V	$I_S=1.05\text{A}$ , $V_{GS}=0$
<b>Dynamic <sup>2</sup></b>						
Total Gate Charge	$Q_g$	-	7.5	-	nC	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=4.1\text{A}$
Gate-Source Charge	$Q_{gs}$	-	0.6	-		
Gate-Drain Charge	$Q_{gd}$	-	1	-		
Turn-on Delay Time	$T_{d(on)}$	-	5	-	nS	$V_{DD}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=1\text{A}$ , $R_{GNE}=15\Omega$
Rise Time	$T_r$	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	13	-		
Fall Time	$T_f$	-	7	-		

Notes:

1. Pulse test :  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.