

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

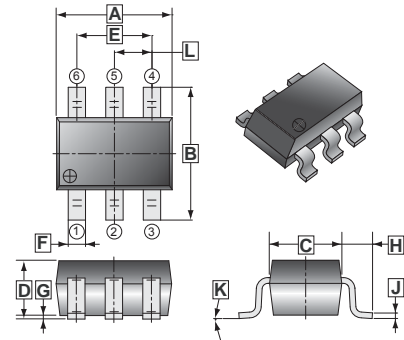
## DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide Low  $R_{DS(on)}$  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, PCMCIA cards, cellular and cordless telephones.

## FEATURES

- Low  $R_{DS(on)}$  provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe TSOP-6 saves board space.
- Fast switching speed
- High performance trench technology

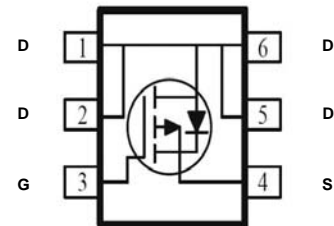
### TSOP-6



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			

## PACKAGE INFORMATION

Package	MPQ	LeaderSize
TSOP-6	3K	7' inch



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	$T_A=25^\circ\text{C}$	-4
		$T_A=70^\circ\text{C}$	-3.2
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-20	A
Continuous Source Current (Diode Conduction) <sup>1</sup>	$I_S$	-1.7	A
Power Dissipation <sup>1</sup>	$P_D$	$T_A=25^\circ\text{C}$	2
		$T_A=70^\circ\text{C}$	1.3
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ 150	$^\circ\text{C}$
<b>Thermal Resistance Ratings</b>			
Maximum Junction to Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 5$ sec	62.5
		Steady State	110

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)

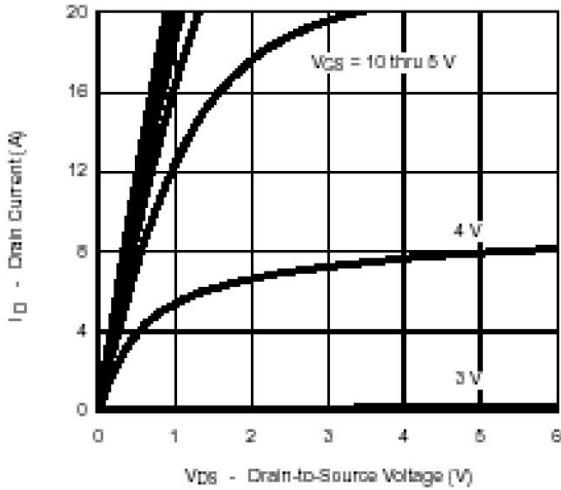
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS} = 0\text{V}, V_{GS} = \pm 8\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu\text{A}$	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$
		-	-	-5		$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$
On-State Drain Current <sup>1</sup>	$I_{D(on)}$	-20	-	-	A	$V_{DS} = -5\text{V}, V_{GS} = -4.5\text{V}$
Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	60	m $\Omega$	$V_{GS} = -4.5\text{V}, I_D = -4.0\text{A}, T_J = 55^\circ\text{C}$
		-	-	50		$V_{GS} = -10\text{V}, I_D = -4.0\text{A}$
		-	-	75		$V_{GS} = -4.5\text{V}, I_D = -3.4\text{A}$
Forward Transconductance <sup>1</sup>	$g_{fs}$	-	10	-	S	$V_{DS} = -5\text{V}, I_D = -3.4\text{A}$
Diode Forward Voltage	$V_{SD}$	-	-0.8	-	V	$I_S = 1.3\text{A}, V_{GS} = 0\text{V}$
<b>Dynamic <sup>2</sup></b>						
Total Gate Charge	$Q_g$	-	6.4	-	nC	$V_{DS} = -20\text{V}, V_{GS} = -5\text{V}, I_D = -4.0\text{A}$
Gate-Source Charge	$Q_{gs}$	-	2	-		
Gate-Drain Charge	$Q_{gd}$	-	3.8	-		
Turn-on Delay Time	$T_{d(on)}$	-	7	-	nS	$V_{DD} = -20\text{V}, V_{GEN} = -10\text{V}, R_L = 6\Omega, I_D = -1\text{A}$
Rise Time	$T_r$	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	30	-		
Fall Time	$T_f$	-	22	-		

Notes:

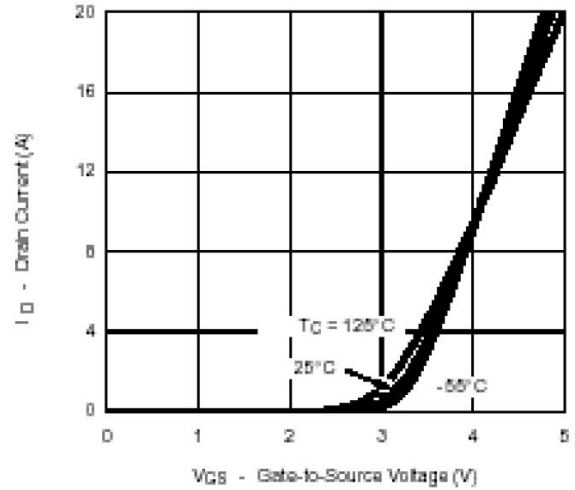
1. Pulse test :  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

**CHARACTERISTICS CURVE**

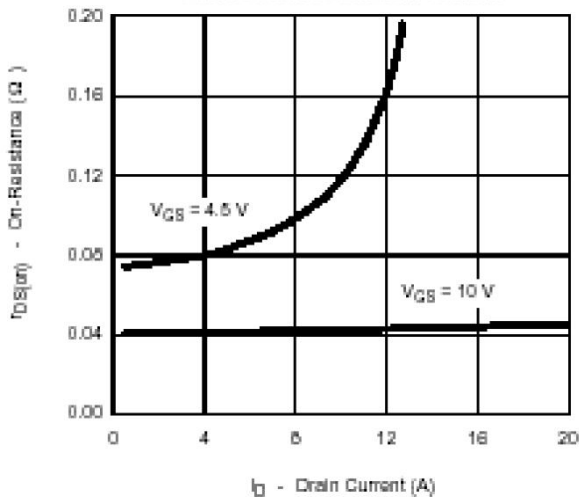
Output Characteristics



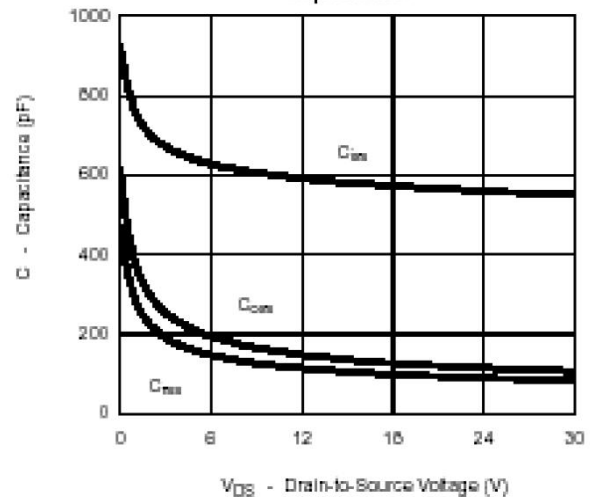
Transfer Characteristics



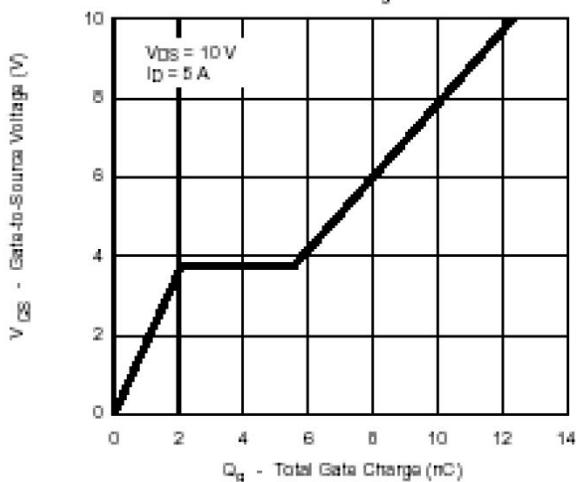
On-Resistance vs. Drain Current



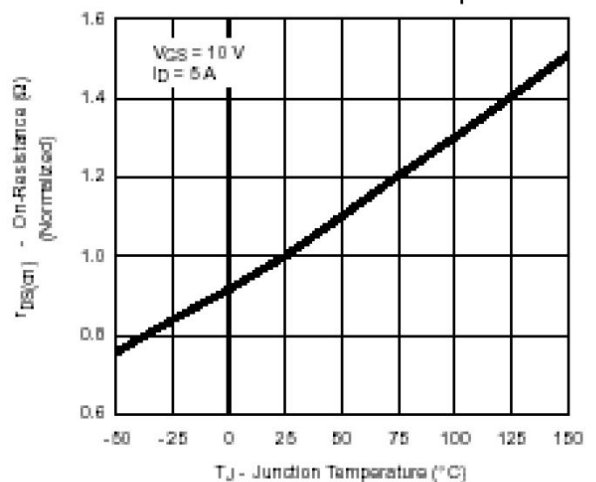
Capacitance



Gate Charge



On-Resistance vs. Junction Temperature



**CHARACTERISTICS CURVE**

