

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

## DESCRIPTION

These miniature surface mount MOSFETs utilize High Cell Density process. Low  $R_{DS(on)}$  assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry.

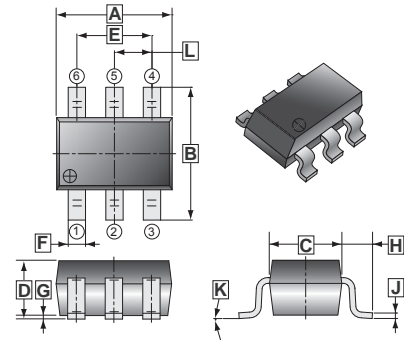
## FEATURES

- Low  $R_{DS(on)}$  provides higher efficiency and extends battery life.
- Low gate charge
- Fast switch
- Miniature TSOP-6 surface mount package saves board space

## APPLICATION

Power switch, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

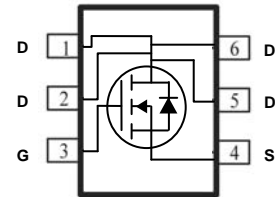
### TSOP-6



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	Leader Size
TSOP-6	3K	7 inch



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	$T_A = 25^\circ\text{C}$	3.4
		$T_A = 70^\circ\text{C}$	2.7
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	$\pm 15$	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.

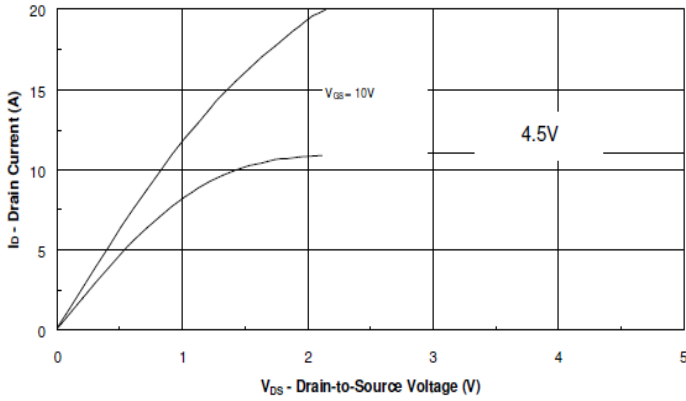
**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
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	$V_{DS}=0$ , $V_{GS}= \pm 20\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=48\text{V}$ , $V_{GS}=0$
		-	-	50		$V_{DS}=48\text{V}$ , $V_{GS}=0$ , $T_J= 55^\circ\text{C}$
On-State Drain Current <sup>1</sup>	$I_{D(on)}$	10	-	-	A	$V_{DS}=5\text{V}$ , $V_{GS}=10\text{V}$
Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	92	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=3.4\text{A}$
		-	-	107		$V_{GS}=4.5\text{V}$ , $I_D=3.1\text{A}$
Forward Transconductance <sup>1</sup>	$g_{fs}$	-	8	-	S	$V_{DS}=4.5\text{V}$ , $I_D=3.4\text{A}$
Diode Forward Voltage	$V_{SD}$	-	1.1	-	V	$I_S=1.7\text{A}$ , $V_{GS}=0$
<b>Dynamic <sup>2</sup></b>						
Total Gate Charge	$Q_g$	-	3.6	-	nC	$V_{DS}=30\text{V}$ , $V_{GS}=5\text{V}$ , $I_D=3.4\text{A}$
Gate-Source Charge	$Q_{gs}$	-	1.8	-		
Gate-Drain Charge	$Q_{gd}$	-	1.3	-		
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	$V_{DD}=30\text{V}$ , $V_{GEN}=10\text{V}$ , $R_L=30\Omega$ , $I_D=1\text{A}$
Rise Time	$T_r$	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	$T_f$	-	10	-		

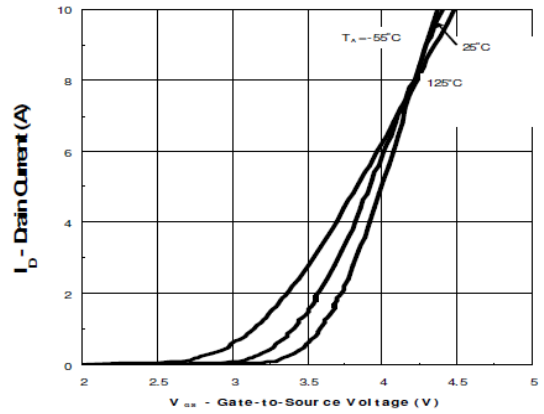
Notes

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

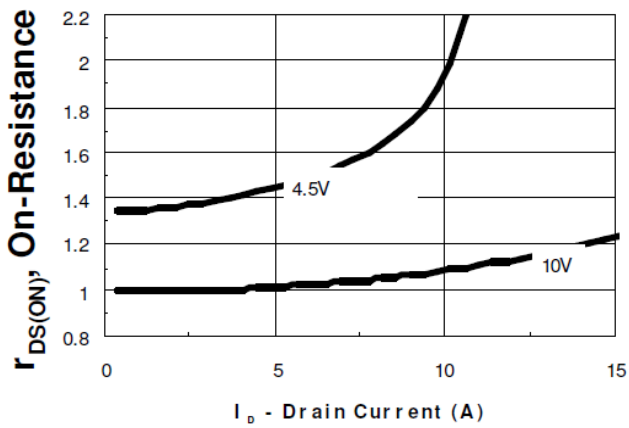
**CHARACTERISTIC CURVES**



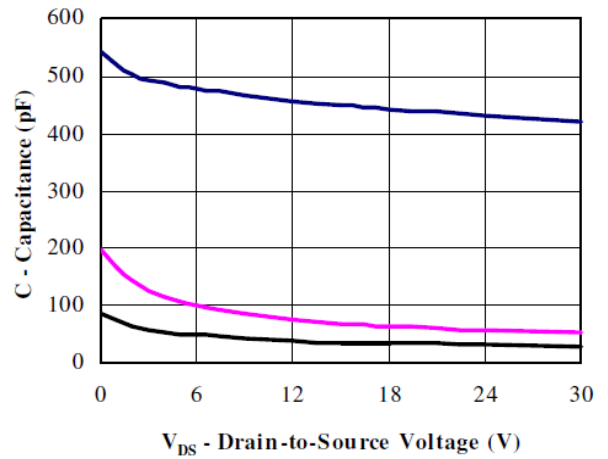
Output Characteristics



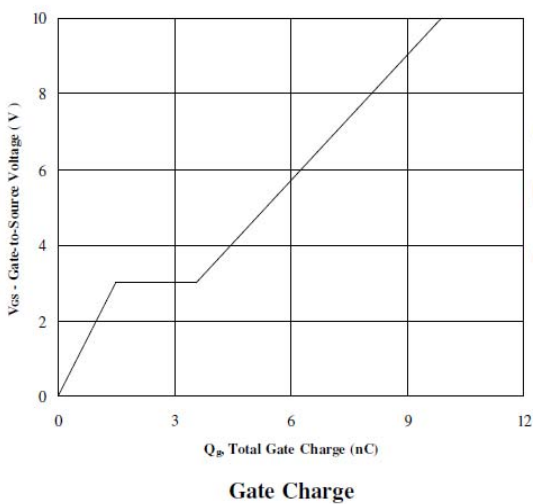
Transfer Characteristics



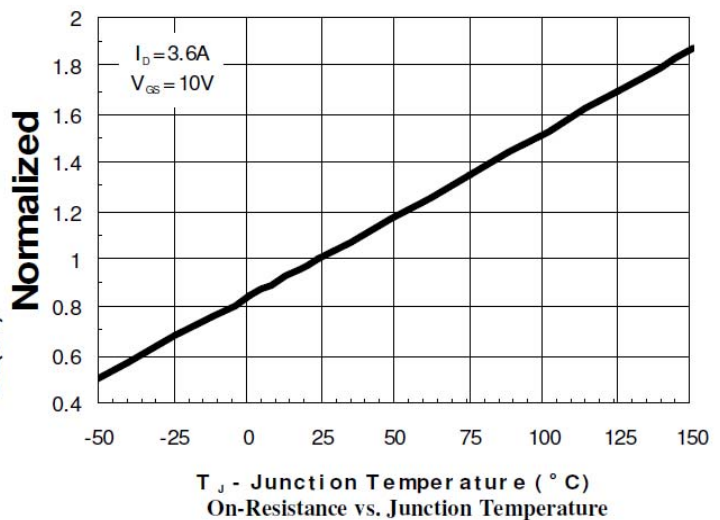
On-Resistance vs. Drain Current



Capacitance

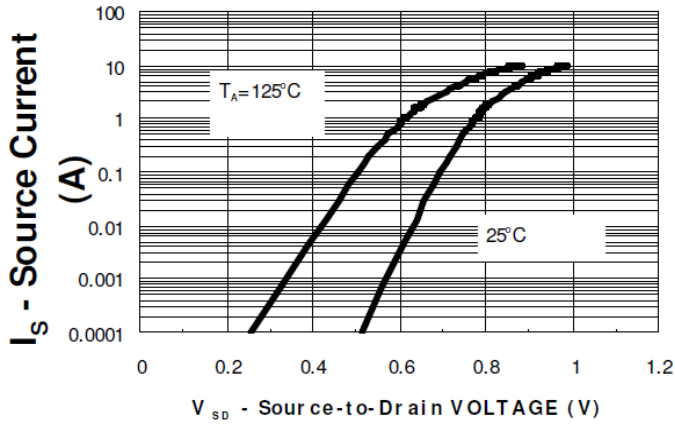


Gate Charge

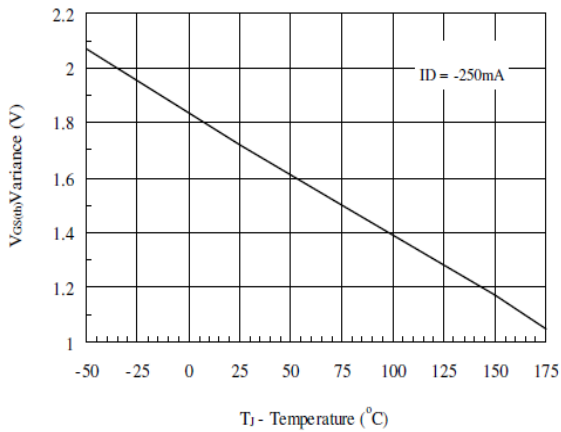


On-Resistance vs. Junction Temperature

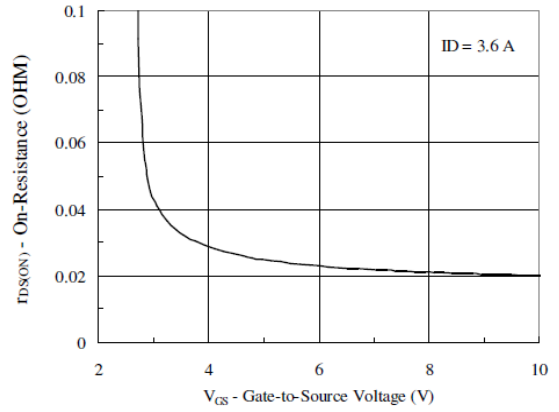
**CHARACTERISTIC CURVES**



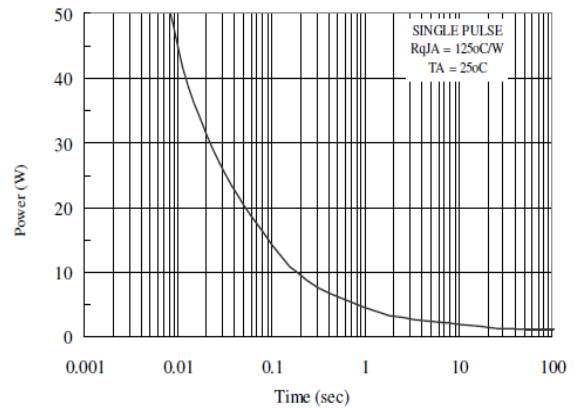
Source-Drain Diode Forward Voltage



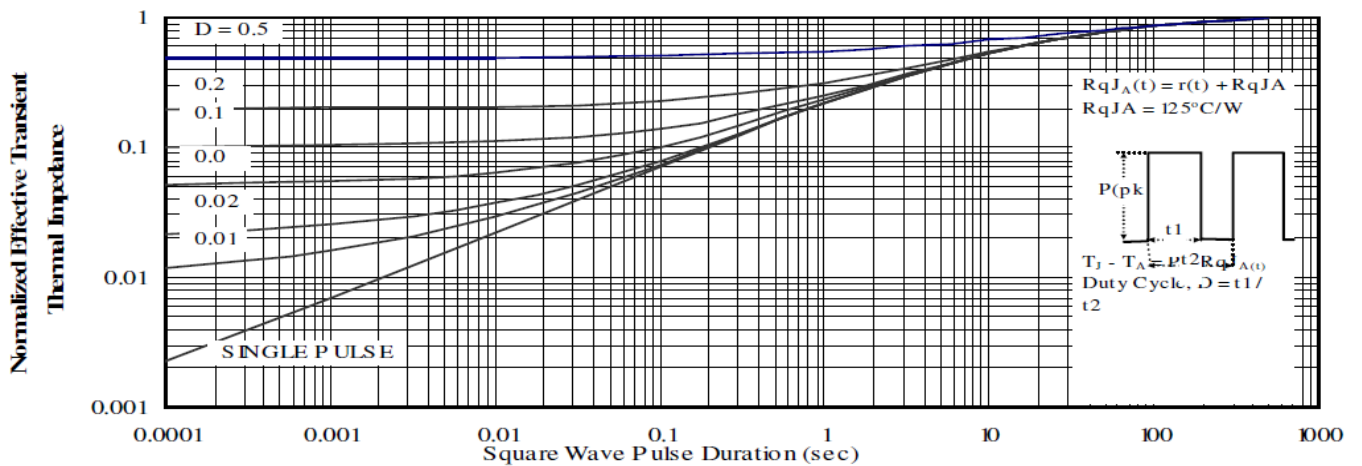
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient