

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.

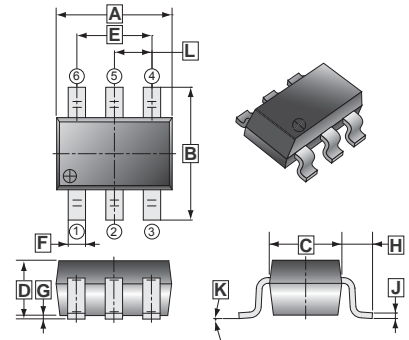
FEATURES

- 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.

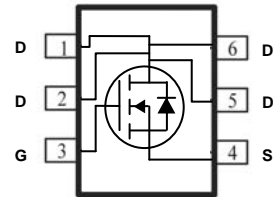
TSOP-6



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}	± 20	V
Continuous Drain Current ¹	I_D	$T_A = 25^\circ\text{C}$	3.4
		$T_A = 70^\circ\text{C}$	2.7
Pulsed Drain Current ²	I_{DM}	± 15	A
Continuous Source Current (Diode Conduction) ¹	I_S	1.7	A
Power Dissipation ¹	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	$^\circ\text{C}$
Thermal Resistance Ratings			
Maximum Junction to Ambient ¹	$R_{\theta JA}$	$t \leq 5$ sec	62.5
		Steady State	110

Notes

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

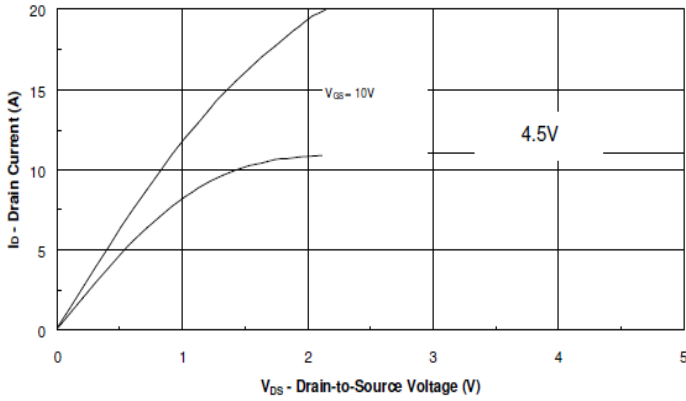
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

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}	-	-	± 100	nA	$V_{DS}=0$, $V_{GS}= \pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=48\text{V}$, $V_{GS}=0$
		-	-	50		$V_{DS}=48\text{V}$, $V_{GS}=0$, $T_J= 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	10	-	-	A	$V_{DS}=5\text{V}$, $V_{GS}=10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	92	m Ω	$V_{GS}=10\text{V}$, $I_D=3.4\text{A}$
		-	-	107		$V_{GS}=4.5\text{V}$, $I_D=3.1\text{A}$
Forward Transconductance ¹	g_{fs}	-	8	-	S	$V_{DS}=4.5\text{V}$, $I_D=3.4\text{A}$
Diode Forward Voltage	V_{SD}	-	1.1	-	V	$I_S=1.7\text{A}$, $V_{GS}=0$
Dynamic ²						
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	-		

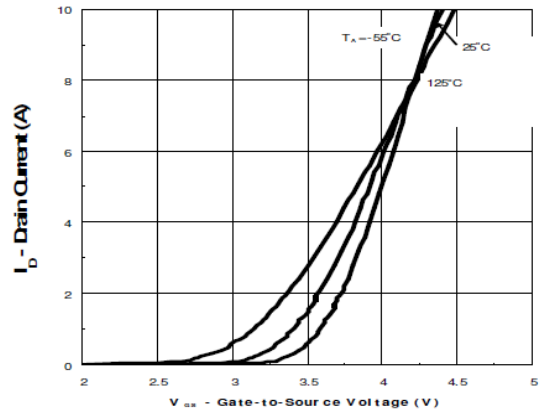
Notes

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

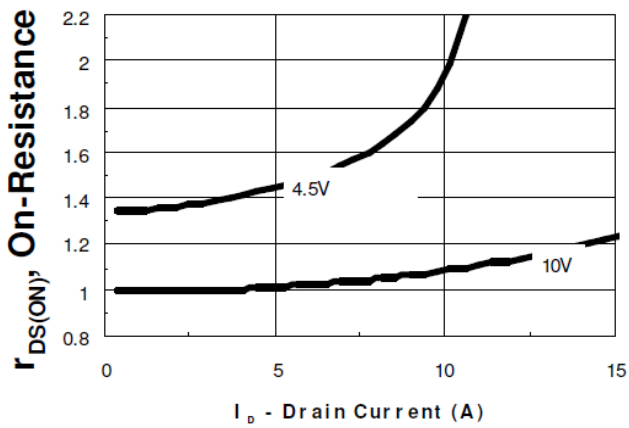
CHARACTERISTIC CURVES



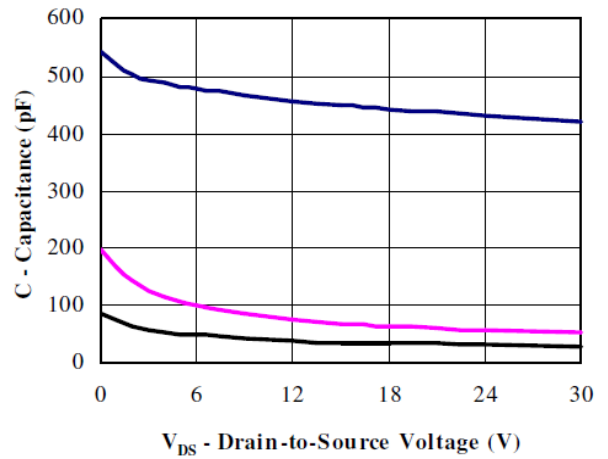
Output Characteristics



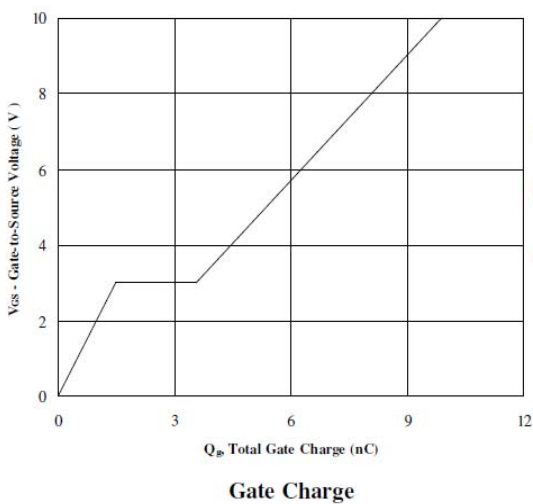
Transfer Characteristics



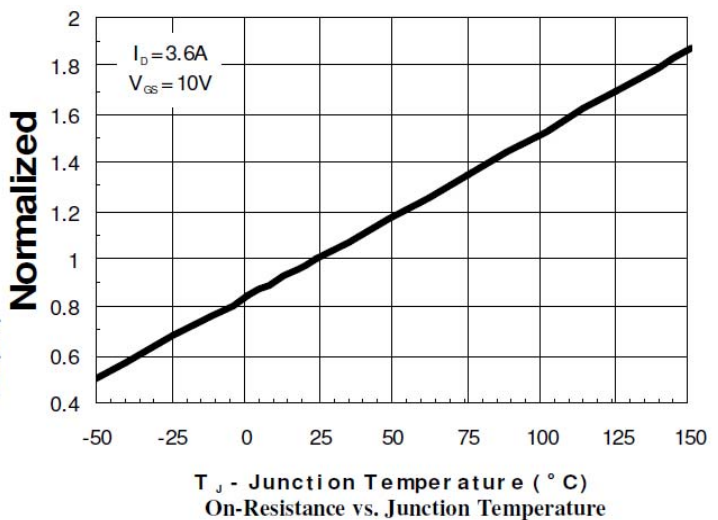
On-Resistance vs. Drain Current



Capacitance

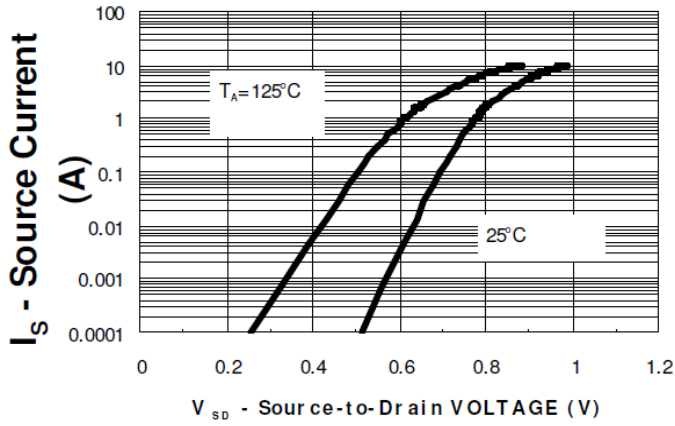


Gate Charge

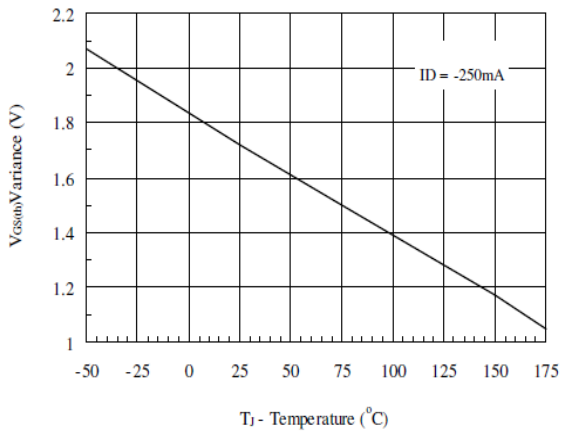


On-Resistance vs. Junction Temperature

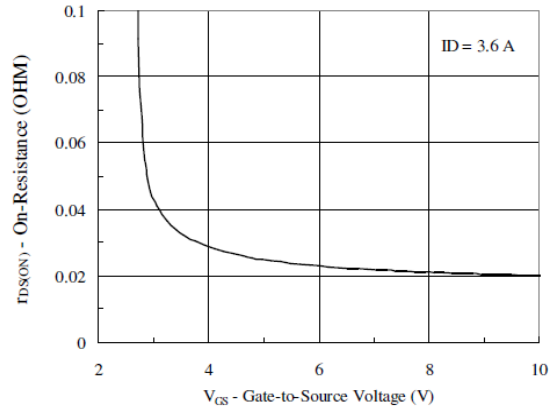
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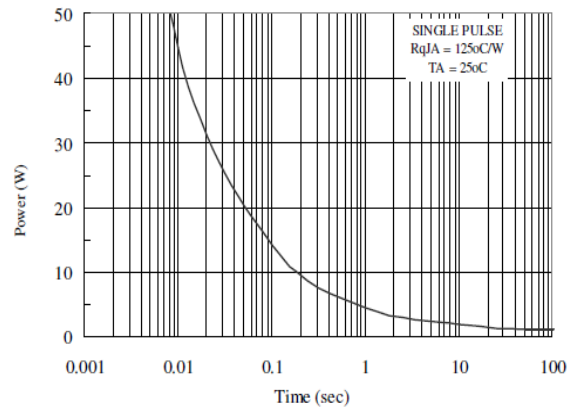
Source-Drain Diode Forward Voltage



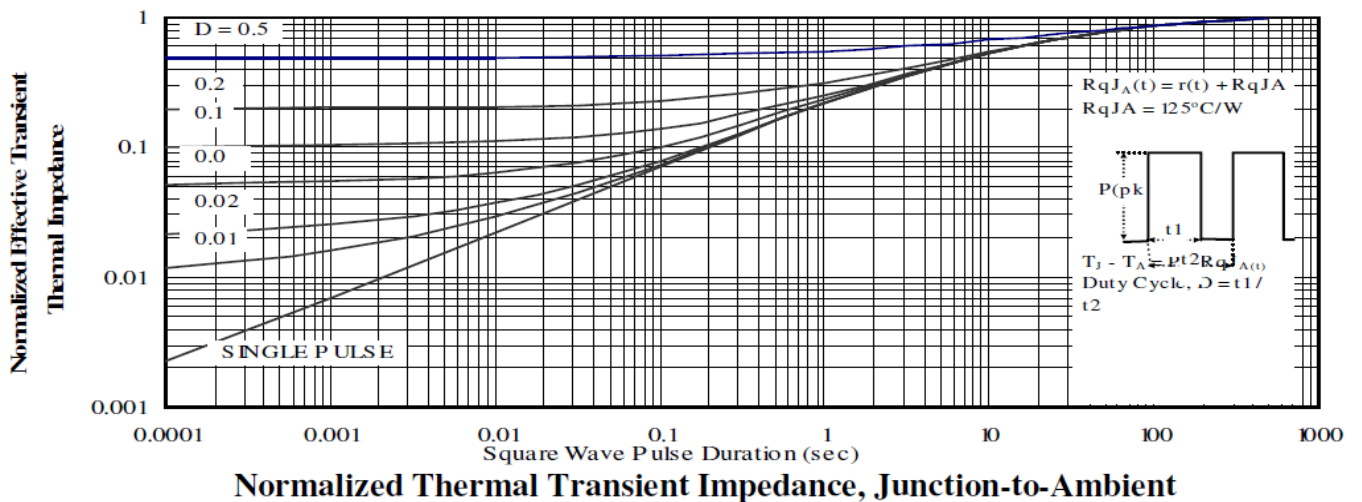
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient