

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

DESCRIPTION

These miniature surface mount MOSFETs utilize a 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. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

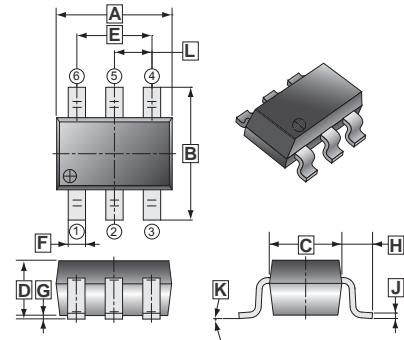
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Miniature TSOP-6 surface mount package saves board space.
- High power and current handling capability.

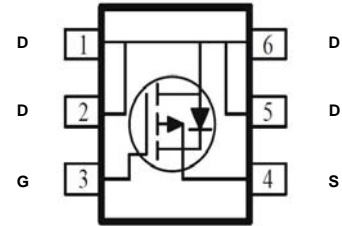
PACKAGE INFORMATION

Package	MPQ	LeaderSize
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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ¹	I_D	$T_A=25^\circ\text{C}$	-4.9
		$T_A=70^\circ\text{C}$	-4.0
Pulsed Drain Current ²	I_{DM}	-20	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	$t \leq 5 \text{ sec}$	$R_{\theta JA}$	62.5
			110
			$^\circ\text{C} / \text{W}$

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
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-0.7	-	-	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 100	nA	$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$
		-	-	-5		$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	-15	-	-	A	$V_{DS} = -4.5\text{V}, V_{GS} = -4.5\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	56	m Ω	$V_{GS} = -4.5\text{V}, I_D = -4.9\text{A}$
		-	-	80		$V_{GS} = -2.5\text{V}, I_D = -4.2\text{A}$
		-	-	150		$V_{GS} = -1.8\text{V}, I_D = -3.1\text{A}$
Forward Transconductance ¹	g_{fs}	-	11	-	S	$V_{DS} = -10\text{V}, I_D = -4.9\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.8	-	V	$I_S = 1.7\text{A}, V_{GS} = 0\text{V}$
Dynamic ²						
Total Gate Charge	Q_g	-	8	-	nC	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V}, I_D = -4.9\text{A}$
Gate-Source Charge	Q_{gs}	-	1.8	-		
Gate-Drain Charge	Q_{gd}	-	1.9	-		
Turn-on Delay Time	$T_{d(on)}$	-	22	-	nS	$V_{DD} = -10\text{V}, V_{GEN} = -4.5\text{V}, R_L = 6\Omega, I_D = -1\text{A}$
Rise Time	T_r	-	35	-		
Turn-off Delay Time	$T_{d(off)}$	-	45	-		
Fall Time	T_f	-	25	-		

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

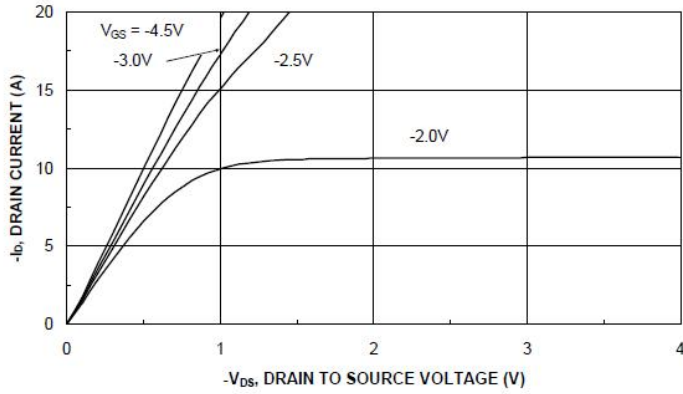


Figure 1. Output Characteristics

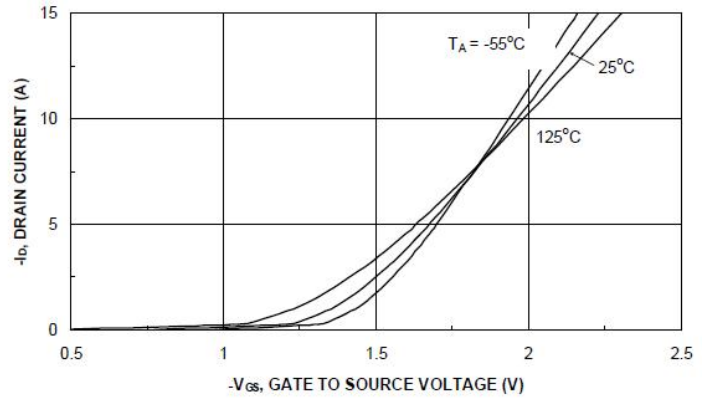


Figure 2. Transfer Characteristics

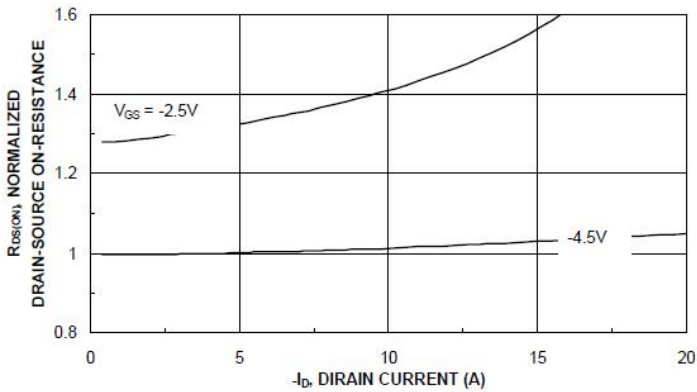


Figure 3. On-Resistance vs. Drain Current

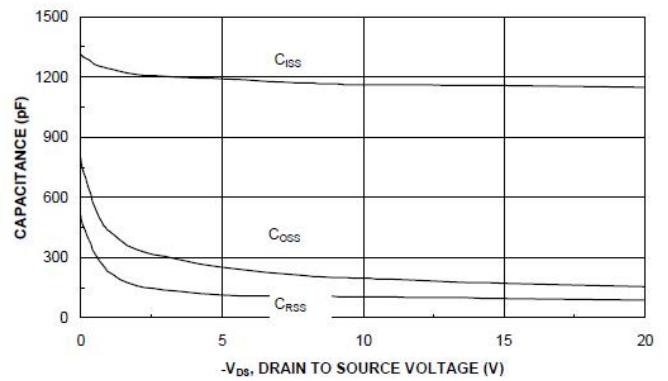


Figure 4. Capacitance

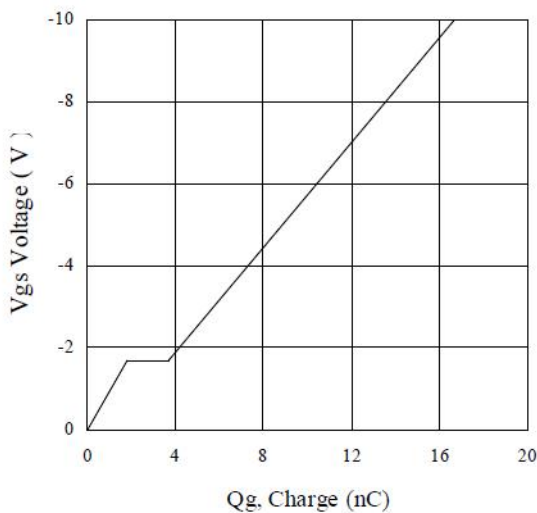


Figure 5. Gate Charge

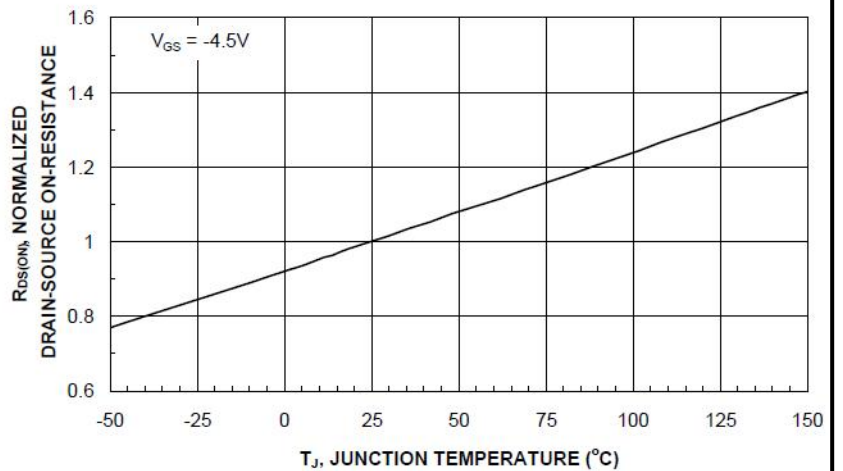


Figure 6. On-Resistance vs. Junction Temperature

CHARACTERISTICS CURVE

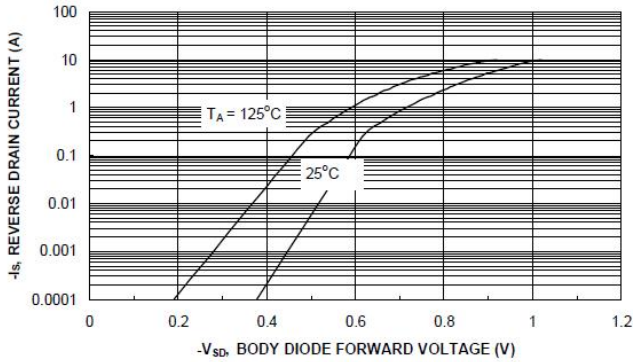


Figure 7. Source-Drain Diode Forward Voltage

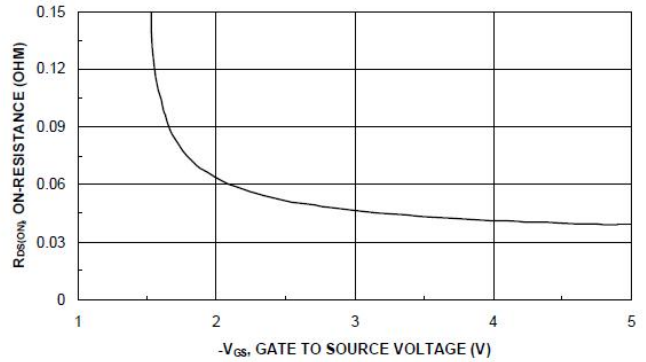


Figure 8. On-Resistance with Gate to Source Voltage

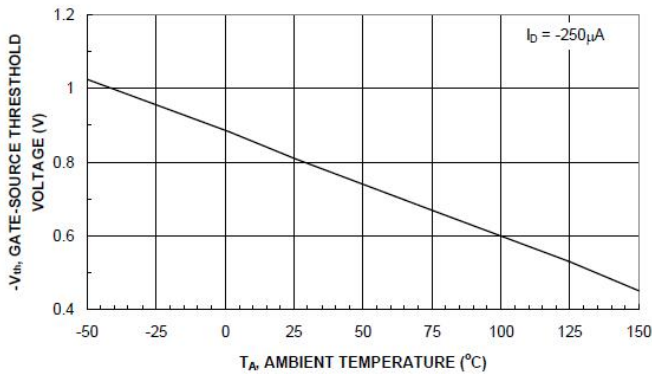


Figure 9. V_{th} Gate to Source Voltage Vs Temperature

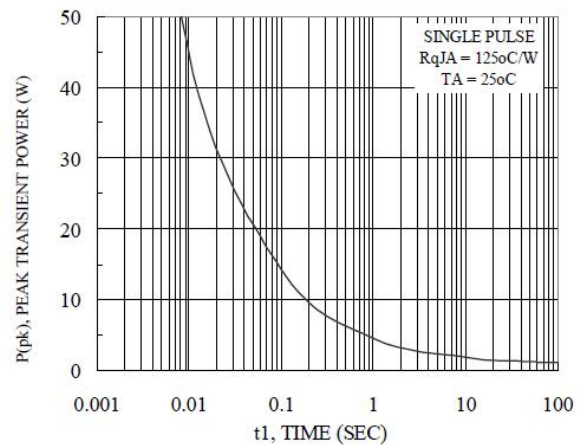


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

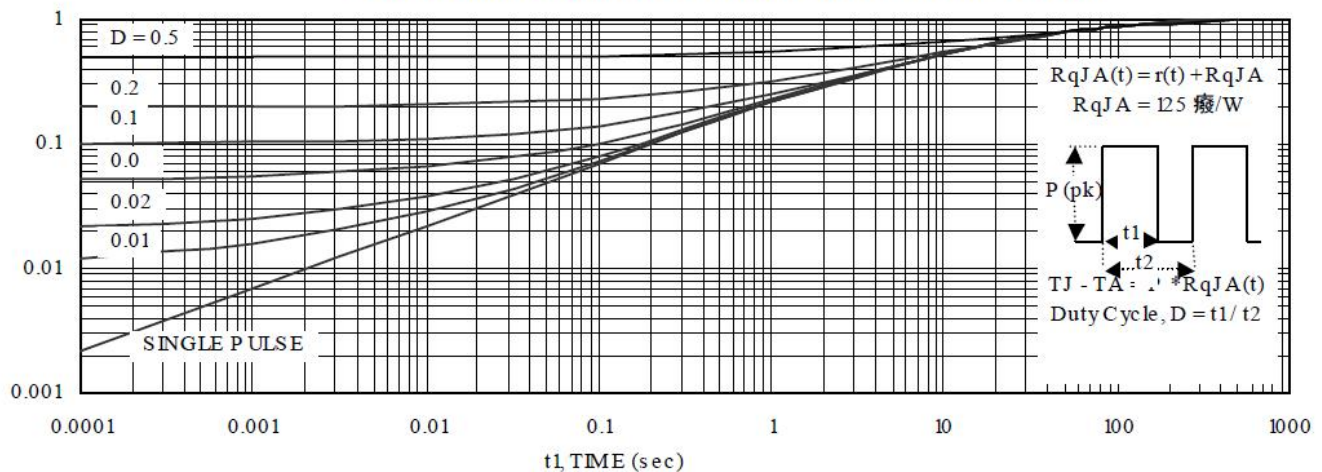


Figure 11. Transient Thermal Response Curve