

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 $R_{DS(on)}$ 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.

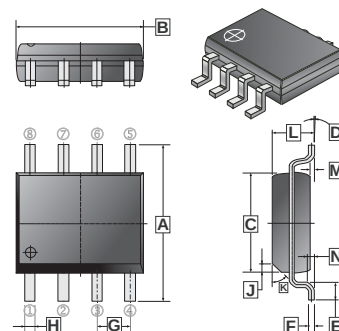
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8 saves board space.
- Fast switching speed.
- High performance trench technology.

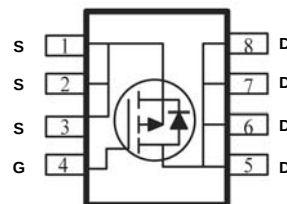
PACKAGE INFORMATION

Package	MPQ	LeaderSize
SOP-8	2.5K	13' inch

SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375	REF.
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25	REF.
G	1.27	TYP.			



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}	± 20	V
Continuous Drain Current ¹	$T_A = 25^\circ\text{C}$	I_D	-6.5	A
	$T_A = 70^\circ\text{C}$		-5.2	A
Pulsed Drain Current ²		I_{DM}	-30	A
Continuous Source Current (Diode Conduction) ¹		I_S	-1.6	A
Total Power Dissipation ¹	$T_A = 25^\circ\text{C}$	P_D	3.1	W
	$T_A = 70^\circ\text{C}$		2.0	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$
Thermal Resistance Ratings				
Thermal Resistance Junction-Case (Max.) ¹	$t \leq 5 \text{ sec}$	$R_{\theta JC}$	25	$^\circ\text{C} / \text{W}$
Thermal Resistance Junction-ambient (Max.) ¹	$t \leq 10 \text{ sec}$	$R_{\theta JA}$	40	$^\circ\text{C} / \text{W}$

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	Teat Conditions
Static						
Gate-Threshold Voltage	V _{GS(th)}	-1	-	-	V	V _{DS} = V _{GS} , I _D = -250μA
Gate-Body Leakage Current	I _{GSS}	-	-	±100	nA	V _{DS} = 0V, V _{GS} = ±20V
Zero Gate Voltage Drain Current	I _{DSS}	-	-	-1	μA	V _{DS} = -24V, V _{GS} = 0V
		-	-	-5		V _{DS} = -24V, V _{GS} = 0V, T _J =55°C
On-State Drain Current ¹	I _{D(on)}	-30	-	-	A	V _{DS} = -5V, V _{GS} = -10V
Drain-Source On-Resistance ¹	R _{DS(ON)}	-	-	49	mΩ	V _{GS} = -10V, I _D = -5.7A
		-	-	75		V _{GS} = -4.5V, I _D = -5.0A
Forward Transconductance ¹	g _{fs}	-	19	-	S	V _{DS} = -15V, I _D = -5.7A
Diode Forward Voltage	V _{SD}	-	-0.7	-	V	I _S = -2.1A, V _{GS} = 0V
Dynamic ²						
Total Gate Charge	Q _g	-	6.4	-	nC	I _D = -5.7A
Gate-Source Charge	Q _{gs}	-	1.9	-		V _{DS} = -15V
Gate-Drain Charge	Q _{gd}	-	2.5	-		V _{GS} = -4.5V
Switching						
Turn-On Delay Time	T _{d(on)}	-	10	-	nS	V _{DD} = -15V
Rise Time	T _r	-	2.8	-		I _D = -1A
Turn-Off Delay Time	T _{d(off)}	-	53.6	-		V _{GEN} = -10V
Fall Time	T _f	-	46	-		R _L = 15Ω R _G = 6Ω

Notes:

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

CHARACTERISTIC CURVE

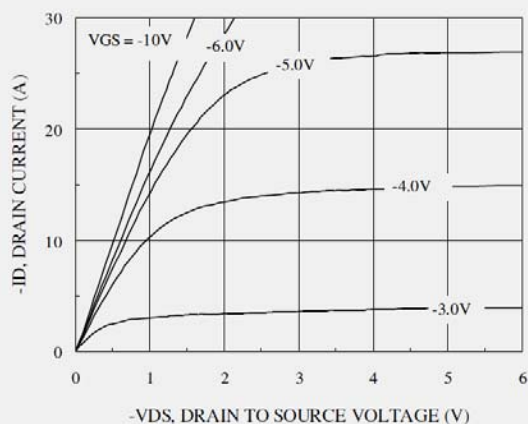


Figure 1. On-Region Characteristics

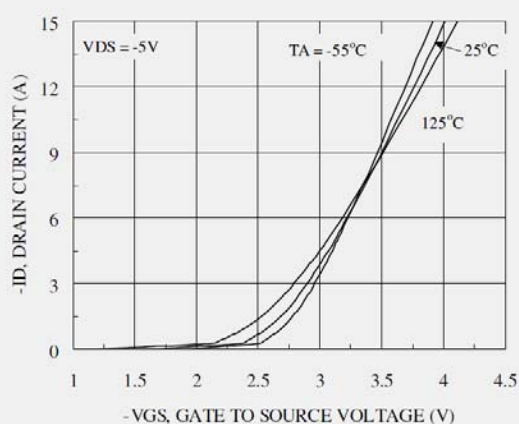


Figure 2. Body Diode Forward Voltage Variation with Source Current and Temperature

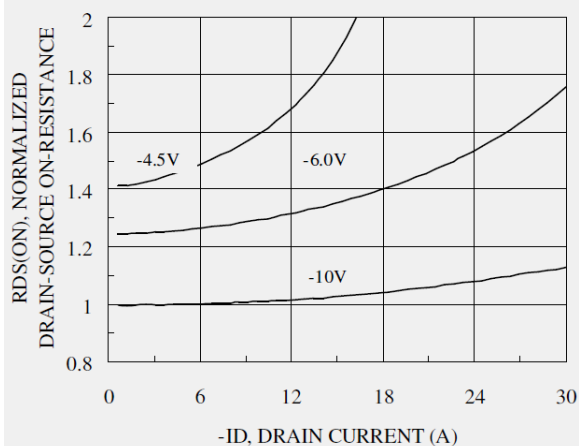


Figure 3. On Resistance Vs Vgs Voltage

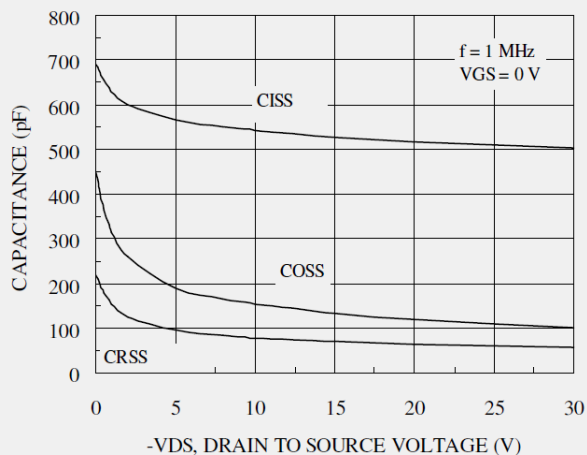


Figure 4. Capacitance Characteristics

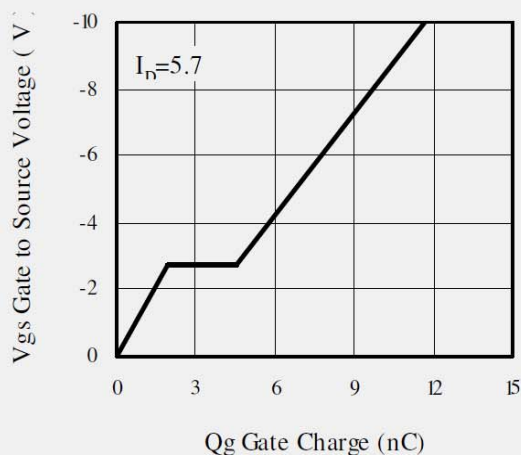


Figure 5. Gate Charge Characteristics

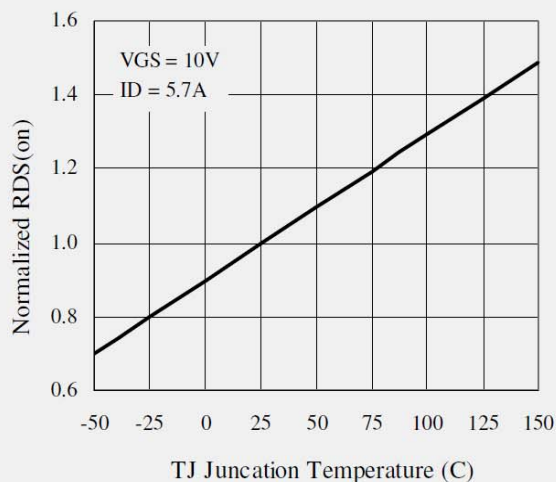


Figure 6. On-Resistance Variation with Temperature

CHARACTERISTIC CURVE

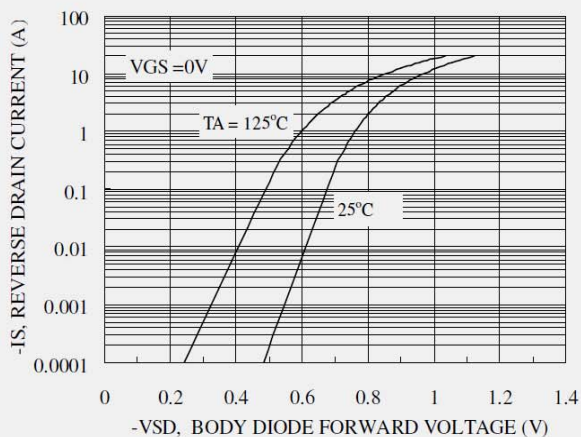


Figure 7. Transfer Characteristics

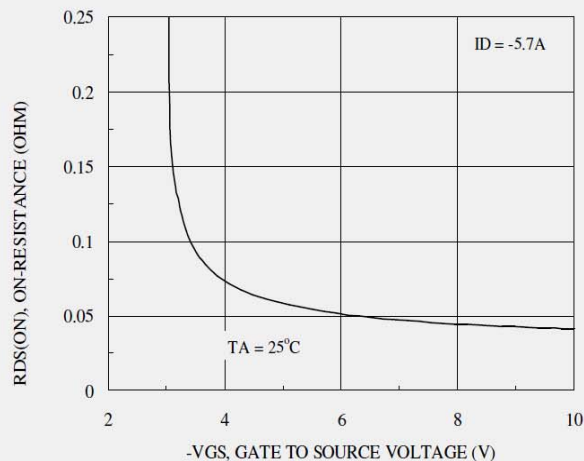


Figure 8. On-Resistance with Gate to Source Voltage

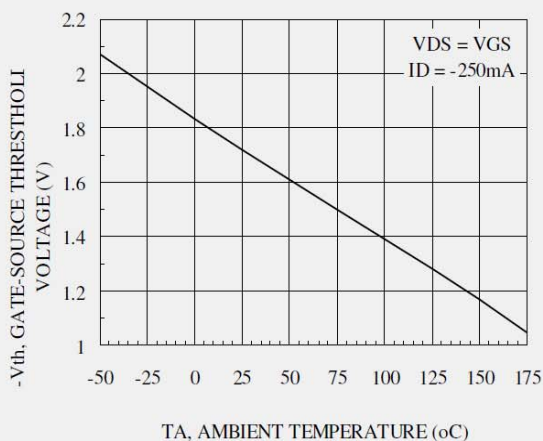


Figure 9. V_{th} Gate to Source Voltage Vs Temperature

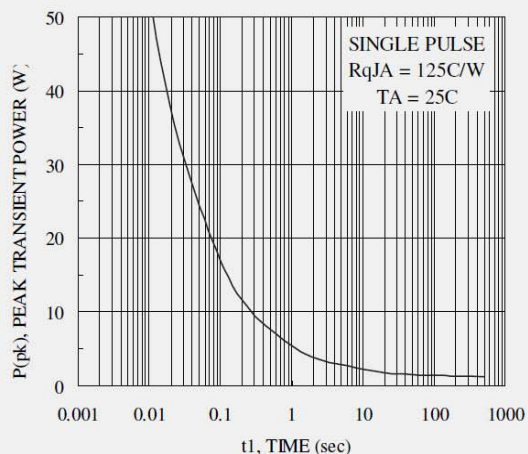


Figure 10. Single Pulse Maximum Power Dissipation

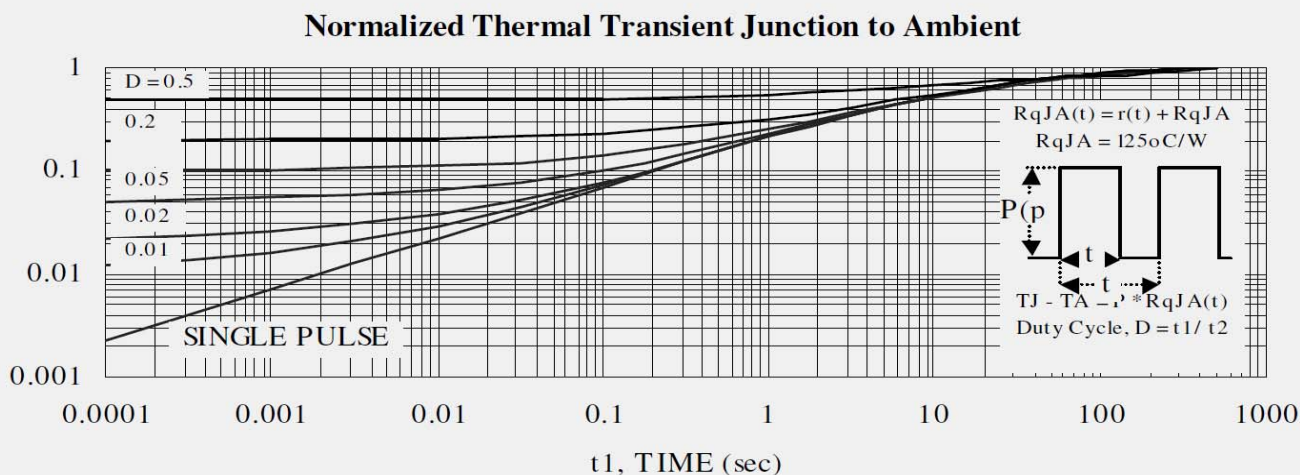


Figure 11. Transient Thermal Response Curve