

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.

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.

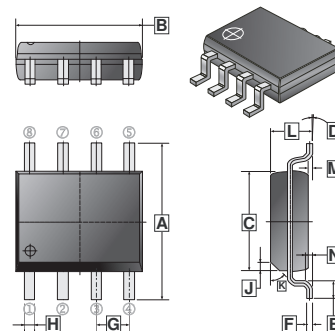
APPLICATION

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

PACKAGE INFORMATION

Package	MPQ	Leader Size
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.				

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	$T_A = 25^\circ\text{C}$	5.1
		$T_A = 70^\circ\text{C}$	4.3
Pulsed Drain Current ²	I_{DM}	30	A
Continuous Source Current (Diode Conduction) ¹	I_S	4.2	A
Total Power Dissipation ¹	P_D	$T_A = 25^\circ\text{C}$	3.1
		$T_A = 70^\circ\text{C}$	2.2
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$
THERMAL RESISTANCE RATINGS			
Maximum Junction to Ambient ¹	$R_{\theta JA}$	$t \leq 10$ sec	40
		Steady State	80

Notes:

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

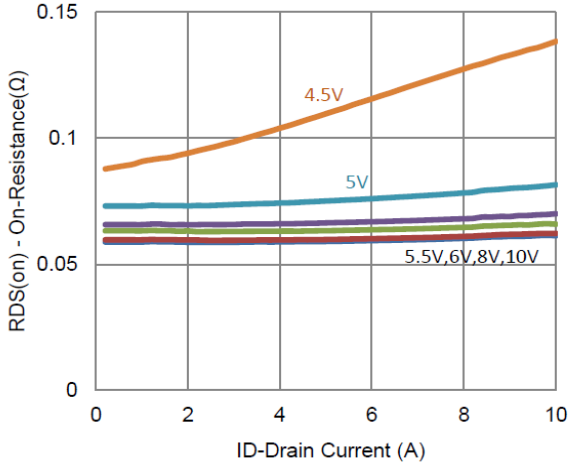
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	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	$V_{DS}=160\text{V}$, $V_{GS}=0$
		-	-	25		$V_{DS}=160\text{V}$, $V_{GS}=0$, $T_J=55^\circ\text{C}$
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	$R_{DS(ON)}$	-	-	78	m Ω	$V_{GS}=10\text{V}$, $I_D=4\text{A}$
		-	-	92		$V_{GS}=5.5\text{V}$, $I_D=3.2\text{A}$
Forward Transconductance ¹	g_{fs}	-	27	-	S	$V_{DS}=15\text{V}$, $I_D=4\text{A}$
Diode Forward Voltage	V_{SD}	-	0.71	-	V	$I_S=2.1\text{A}$, $V_{GS}=0$
Dynamic ²						
Total Gate Charge	Q_g	-	54	-	nC	$I_D=4\text{A}$ $V_{DS}=100\text{V}$ $V_{GS}=5.5\text{V}$
Gate-Source Charge	Q_{gs}	-	21	-		
Gate-Drain Charge	Q_{gd}	-	34	-		
Turn-On Delay Time	$T_{d(on)}$	-	27	-	nS	$V_{DS}=100\text{V}$ $I_D=4\text{A}$ $V_{GEN}=10\text{V}$ $R_L=25\Omega$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	35	-		
Turn-Off Delay Time	$T_{d(off)}$	-	97	-		
Fall Time	T_f	-	29	-	pF	$V_{DS}=15\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$
Input Capacitance	C_{iss}	-	4552	-		
Output Capacitance	C_{oss}	-	226	-		
Reverse Transfer Capacitance	C_{rss}	-	215	-		

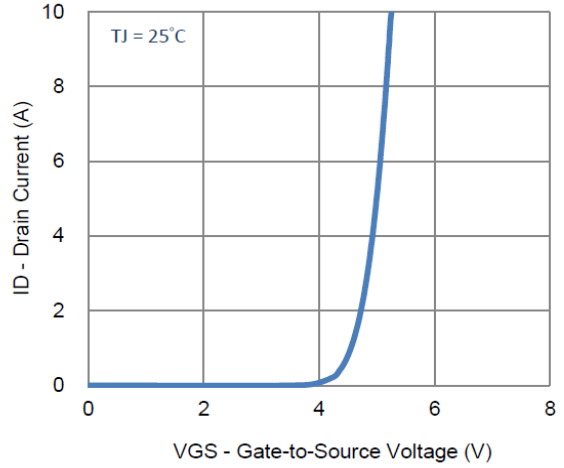
Notes:

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

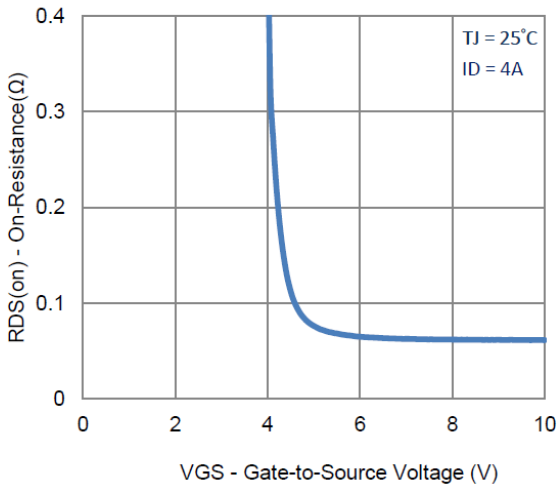
CHARACTERISTIC CURVE



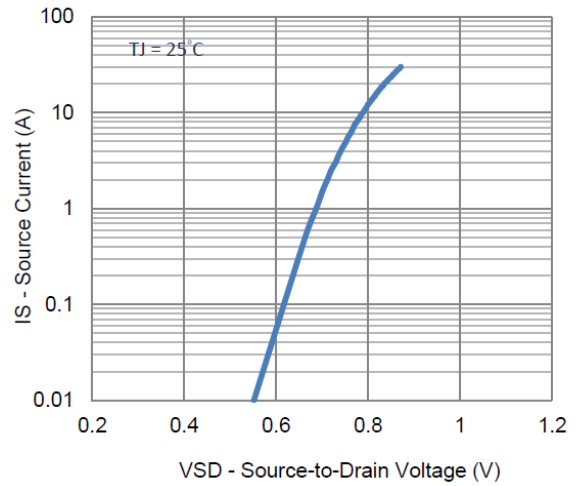
1. On-Resistance vs. Drain Current



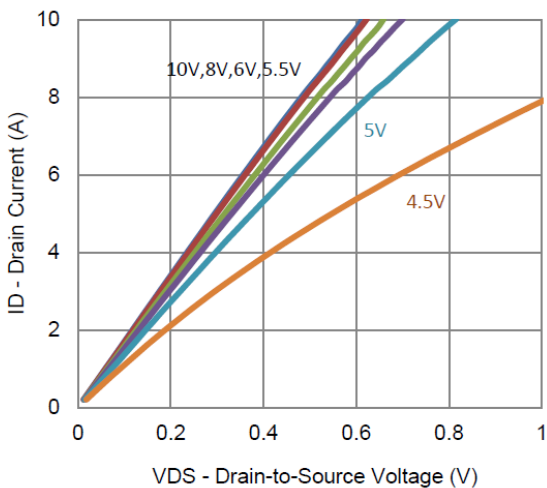
2. Transfer Characteristics



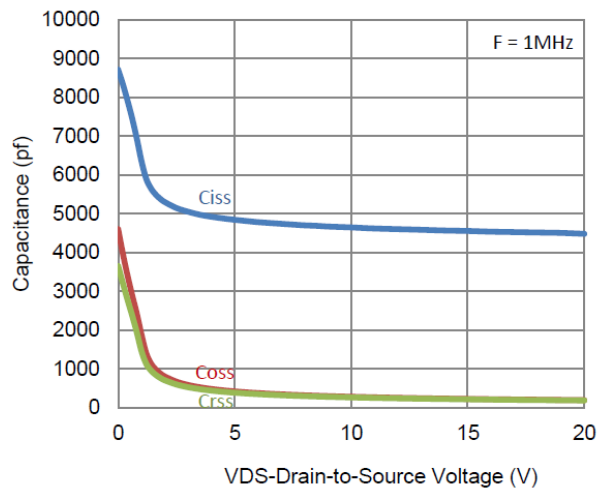
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

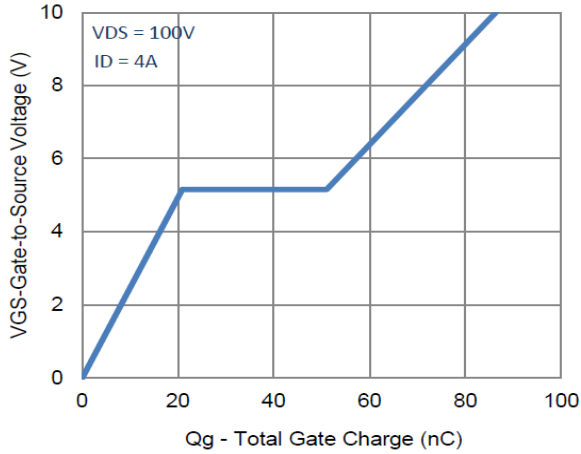


5. Output Characteristics

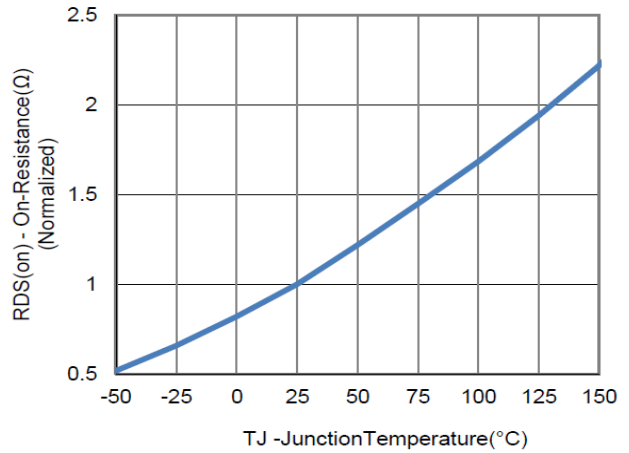


6. Capacitance

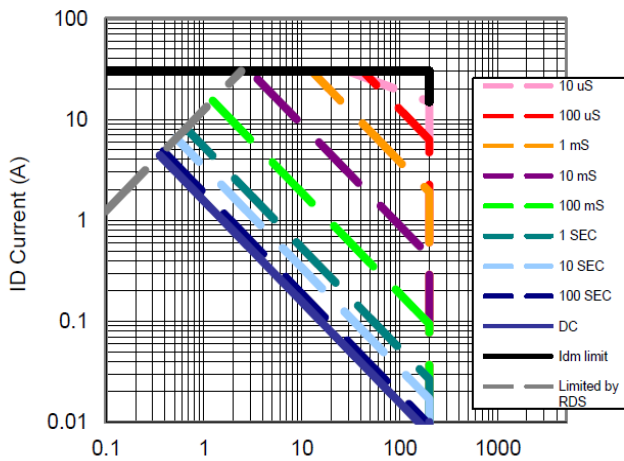
CHARACTERISTIC CURVE



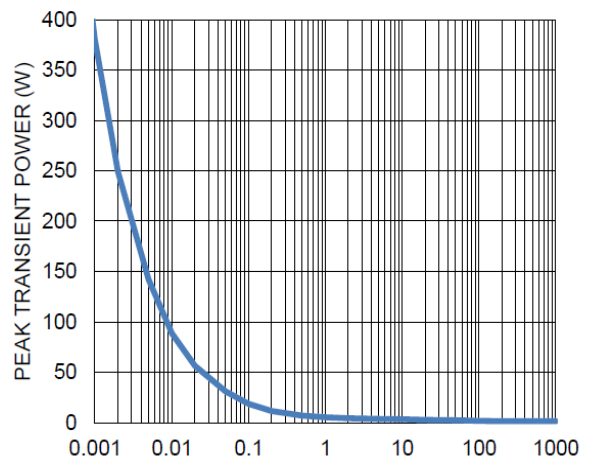
7. Gate Charge



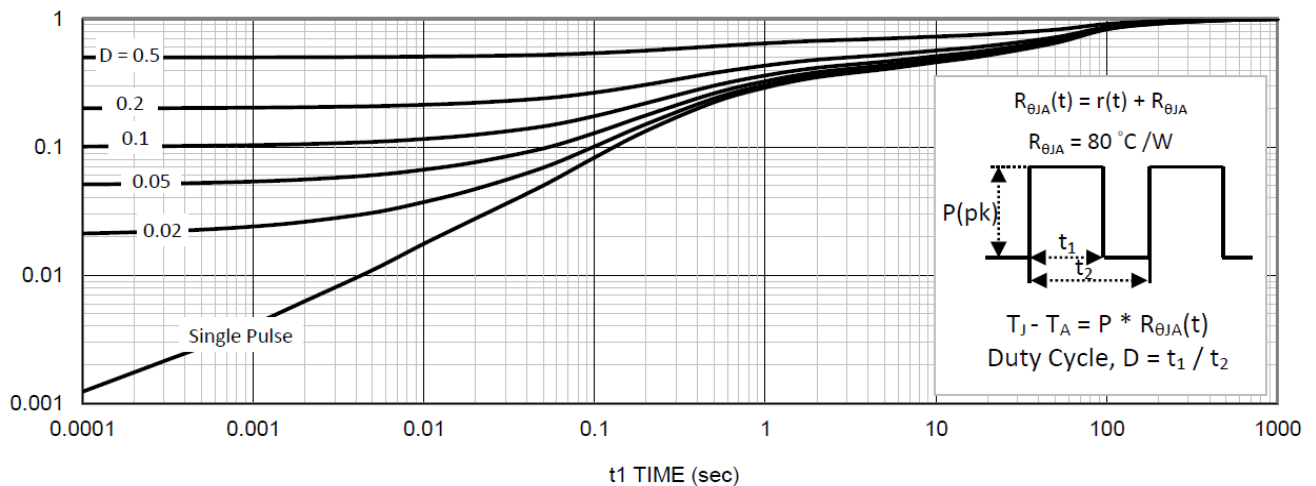
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient