

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.

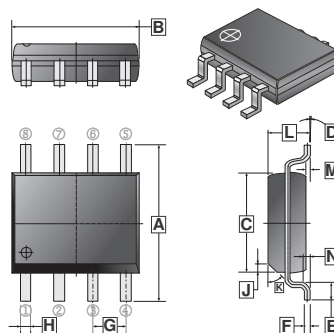
FEATURES

- 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.

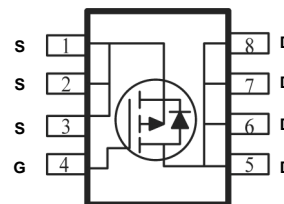
SOP-8



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.				

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13' inch



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

Parameter	Symbol	Ratings	Unit	
Drain-Source Voltage	V_{DS}	-150	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current ¹	I_D	$T_A = 25^\circ\text{C}$	-3.6	A
		$T_A = 70^\circ\text{C}$	-3.1	A
Pulsed Drain Current ²	I_{DM}	-15	A	
Continuous Source Current (Diode Conduction) ¹	I_S	-4.1	A	
Total Power Dissipation ¹	P_D	$T_A = 25^\circ\text{C}$	3.1	W
		$T_A = 70^\circ\text{C}$	2.2	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$	
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient (Max.) ¹	$t \leq 10$ sec	$R_{\theta JA}$	40	$^\circ\text{C} / \text{W}$
	Steady State		80	

Notes:

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

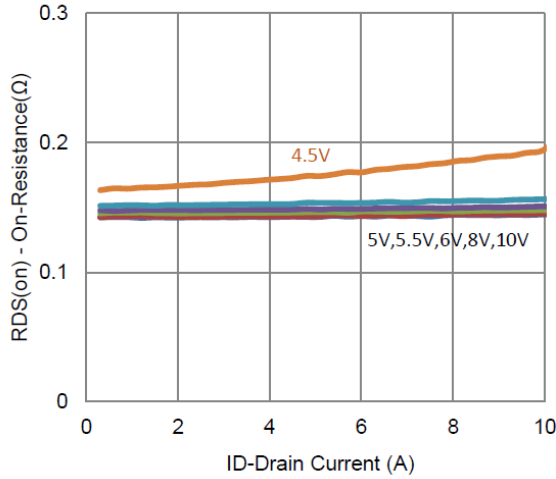
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

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 Current	I_{GSS}	-	-	± 100	nA	$V_{DS} = 0, V_{GS} = \pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -120\text{V}, V_{GS} = 0$
		-	-	-25		$V_{DS} = -120\text{V}, V_{GS} = 0, T_J = 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	-5	-	-	A	$V_{DS} = -5\text{V}, V_{GS} = -10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	160	m Ω	$V_{GS} = -10\text{V}, I_D = -2.8\text{A}$
		-	-	170		$V_{GS} = -5.5\text{V}, I_D = -2.3\text{A}$
Forward Transconductance ¹	g_{fs}	-	38	-	S	$V_{DS} = -15\text{V}, I_D = -2.8\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.76	-	V	$I_S = -2.1\text{A}, V_{GS} = 0$
Dynamic ²						
Input Capacitance	C_{iss}	-	7944	-	pF	$V_{DS} = -15\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
Output Capacitance	C_{oss}	-	290	-		
Reverse Transfer Capacitance	C_{rss}	-	262	-		
Total Gate Charge	Q_g	-	64	-	nC	$I_D = -2.8\text{A}$ $V_{DS} = -75\text{V}$ $V_{GS} = -4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	28	-		
Gate-Drain Charge	Q_{gd}	-	32	-		
Turn-On Delay Time	$T_{d(on)}$	-	19	-	nS	$V_{DS} = -75\text{V}$ $I_D = -2.8\text{A}$ $V_{GEN} = -10\text{V}$ $R_L = 26.8\Omega$ $R_G = 6\Omega$
Rise Time	T_r	-	34	-		
Turn-Off Delay Time	$T_{d(off)}$	-	130	-		
Fall Time	T_f	-	67	-		

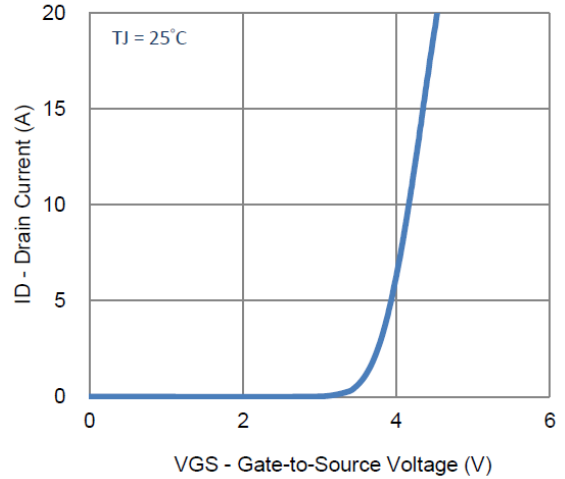
Notes:

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

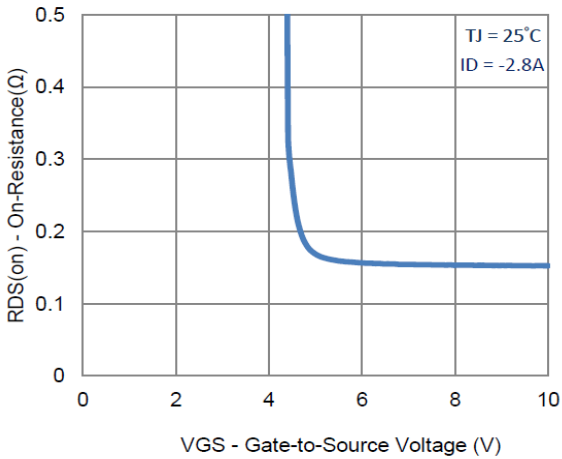
CHARACTERISTIC CURVES



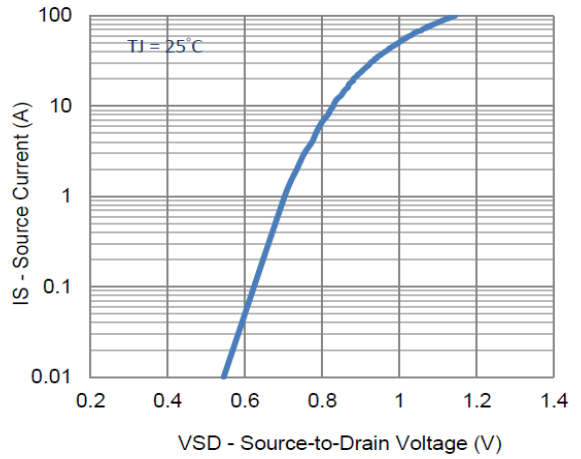
1. On-Resistance vs. Drain Current



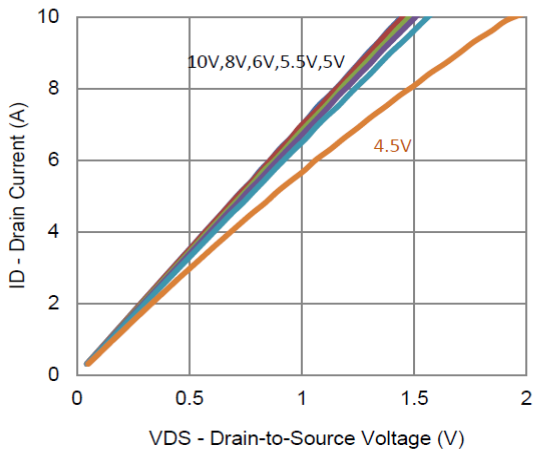
2. Transfer Characteristics



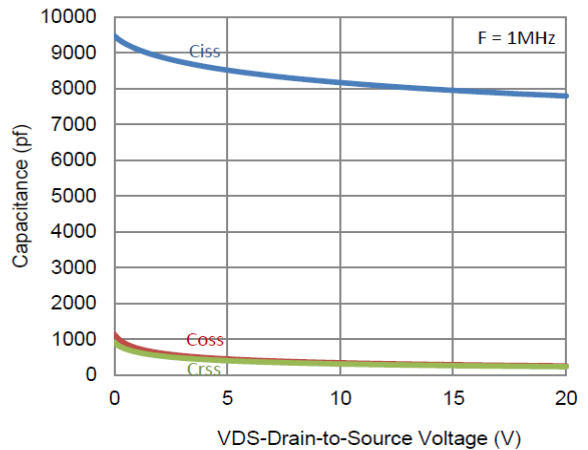
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

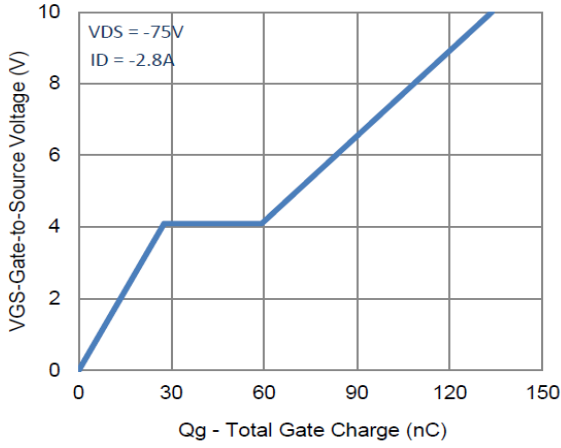


5. Output Characteristics

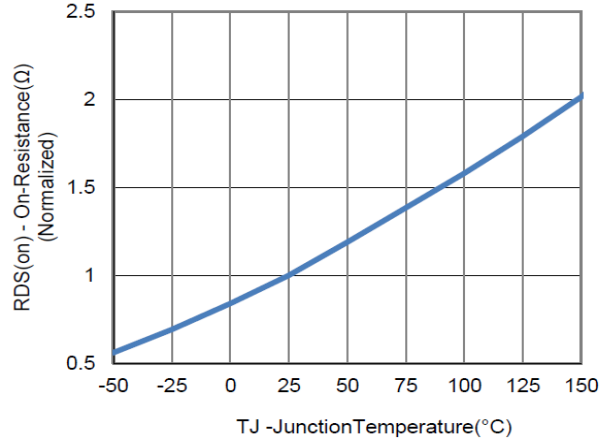


6. Capacitance

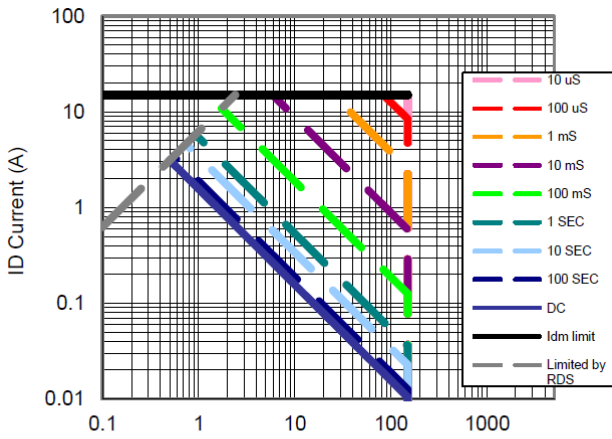
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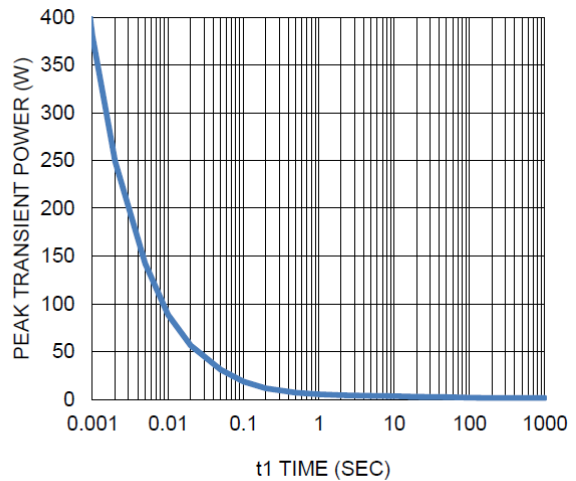
7. Gate Charge



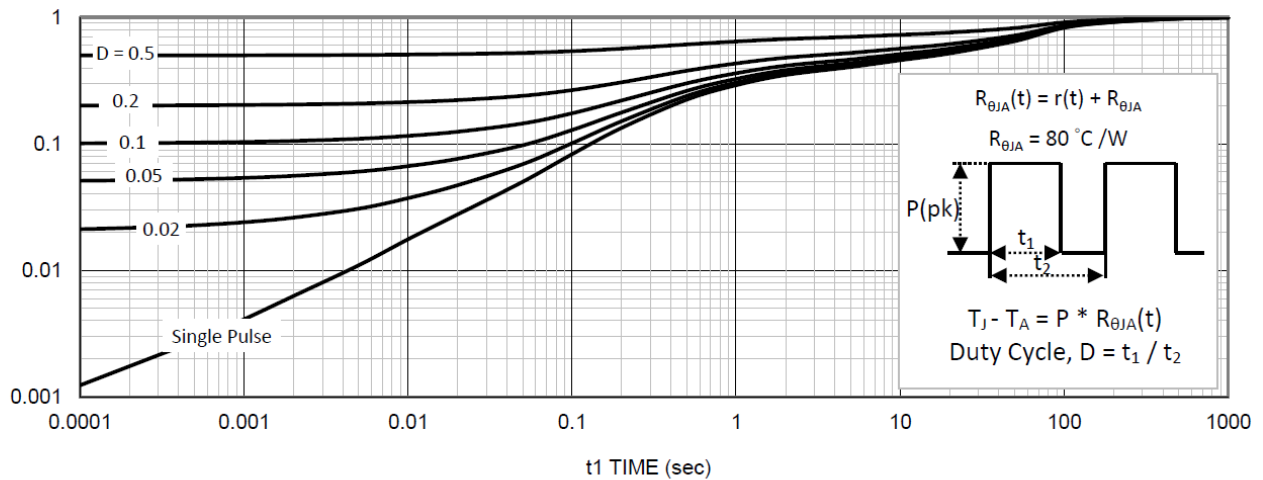
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient