

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.

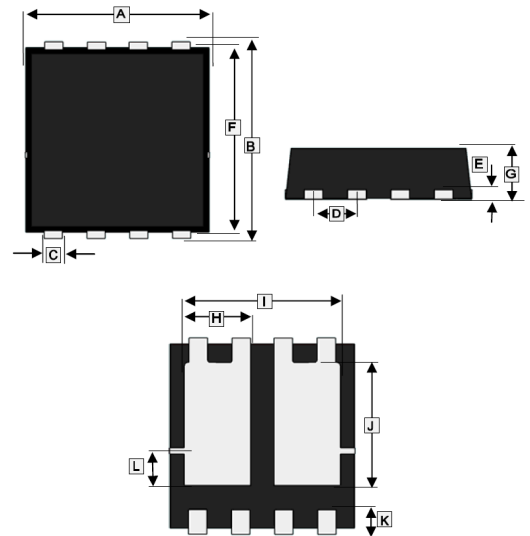
FEATURES

- 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.

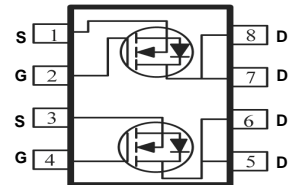
PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN3*3-8PP	3K	13' inch

DFN3*3-8PP



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	3.0 BSC.		G	0.7	0.9
B	3.2 BSC.		H	1.1 BSC.	
C	0.2	0.35	I	2.475 BSC.	
D	0.65 BSC.		J	1.8 BSC.	
E	0.1	0.25	K	0.3	0.5
F	3.0 BSC.		L	0.52 BSC.	



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	I_D	$T_A = 25^\circ\text{C}$	9.4	A
		$T_A = 70^\circ\text{C}$	6.8	A
Pulsed Drain Current ²	I_{DM}	30	A	
Continuous Source Current (Diode Conduction) ¹	I_S	2.1	A	
Total Power Dissipation ¹	P_D	$T_A = 25^\circ\text{C}$	2.5	W
		$T_A = 70^\circ\text{C}$	1.3	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	$R_{\theta JC}$	83	$^\circ\text{C} / \text{W}$
	Steady State	$R_{\theta JA}$	120	$^\circ\text{C} / \text{W}$

Notes:

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

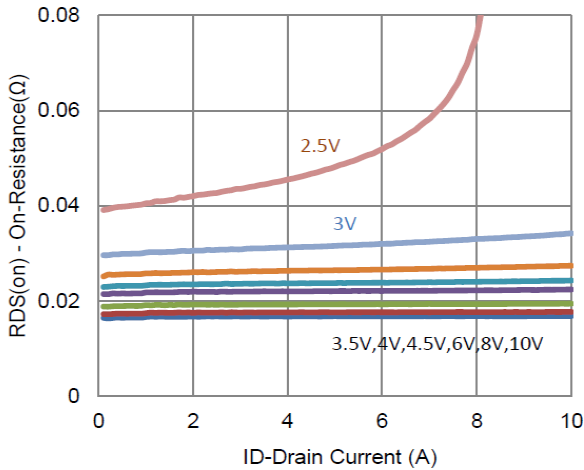
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static						
Gate Threshold Voltage	$V_{GS(th)}$	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	$V_{DS} = 24\text{V}$, $V_{GS} = 0$
		-	-	25	μA	$V_{DS} = 24\text{V}$, $V_{GS} = 0$, $T_J = 55^\circ\text{C}$
On-State Drain Current ¹	$I_{D(on)}$	15	-	-	A	$V_{DS} = 5\text{V}$, $V_{GS} = 10\text{V}$
Drain-Source On-Resistance ¹	$R_{DS(ON)}$	-	-	19	m Ω	$V_{GS} = 10\text{V}$, $I_D = 7\text{A}$
		-	-	28		$V_{GS} = 4.5\text{V}$, $I_D = 5.6\text{A}$
Forward Transconductance ¹	g_{fs}	-	17	-	S	$V_{DS} = 15\text{V}$, $I_D = 7\text{A}$
Diode Forward Voltage	V_{SD}	-	0.71	-	V	$I_S = 1\text{A}$, $V_{GS} = 0$
Dynamic ²						
Total Gate Charge	Q_g	-	5.2	-	nC	$I_D = 7\text{A}$ $V_{DS} = 15\text{V}$ $V_{GS} = 4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	1.7	-		
Gate-Drain Charge	Q_{gd}	-	2	-		
Input Capacitance	C_{iss}	-	528	-	pF	$V_{GS} = 0$ $V_{DS} = 15\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	110	-		
Reverse Transfer Capacitance	C_{rss}	-	72	-		
Turn-On Delay Time	$T_{d(on)}$	-	2	-	nS	$V_{DS} = 15\text{V}$ $I_D = 7\text{A}$ $V_{GEN} = 10\text{V}$ $R_L = 2.1\Omega$ $R_{GEN} = 6\Omega$
Rise Time	T_r	-	5	-		
Turn-Off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	T_f	-	6	-		

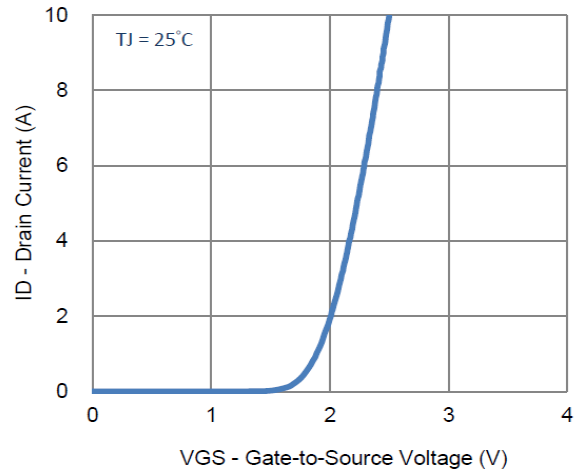
Notes:

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

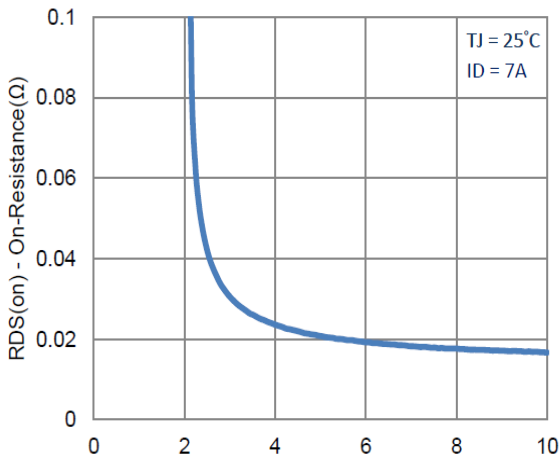
CHARACTERISTIC CURVES



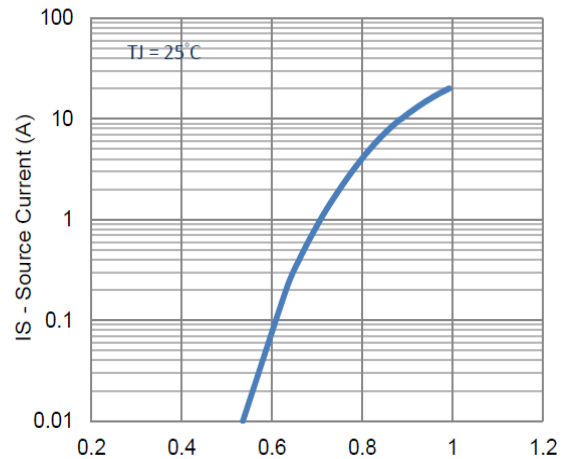
1. On-Resistance vs. Drain Current



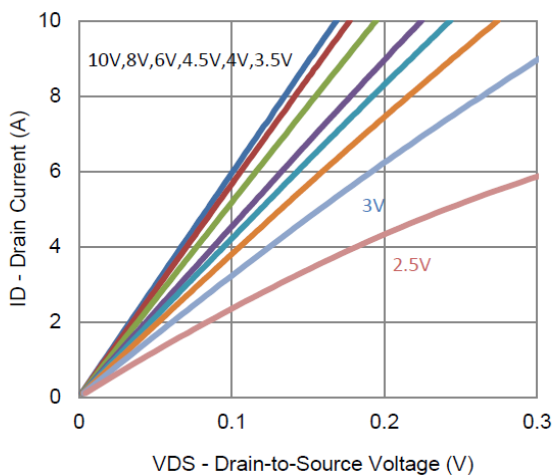
2. Transfer Characteristics



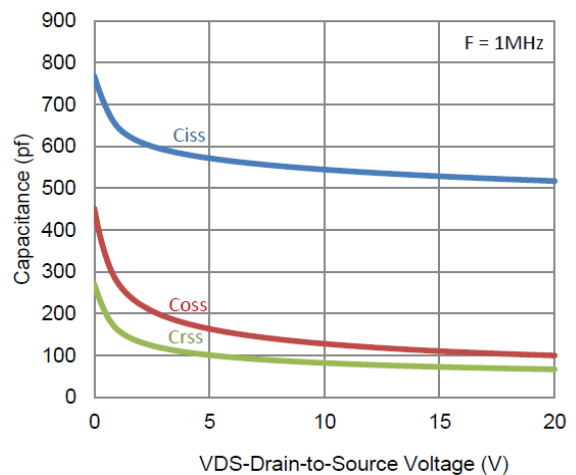
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

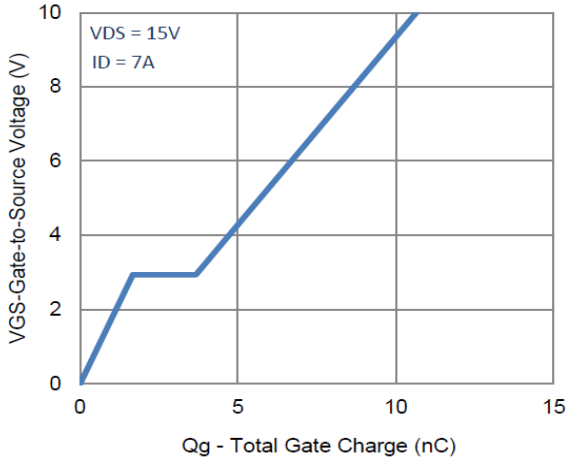


5. Output Characteristics

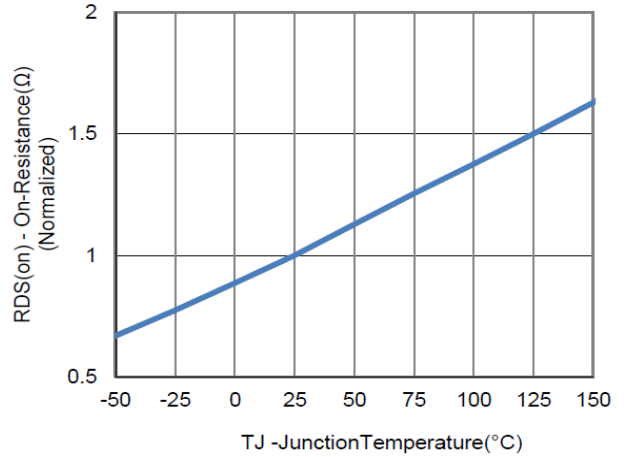


6. Capacitance

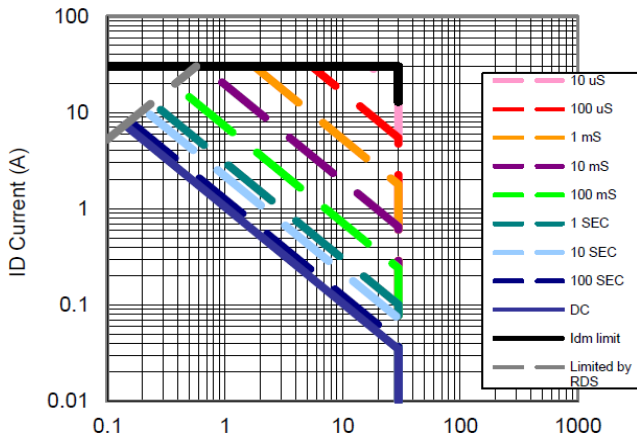
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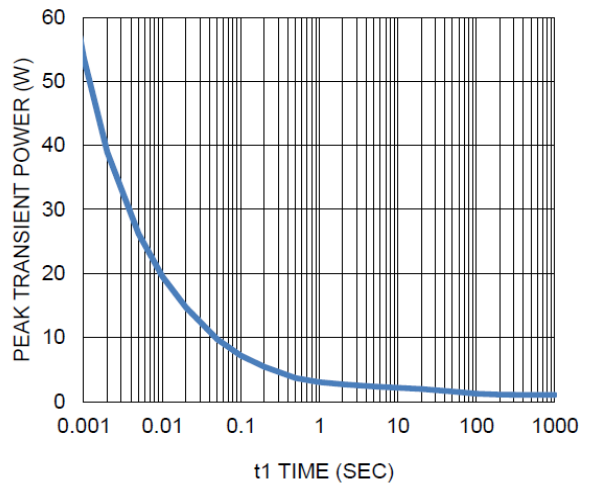
7. Gate Charge



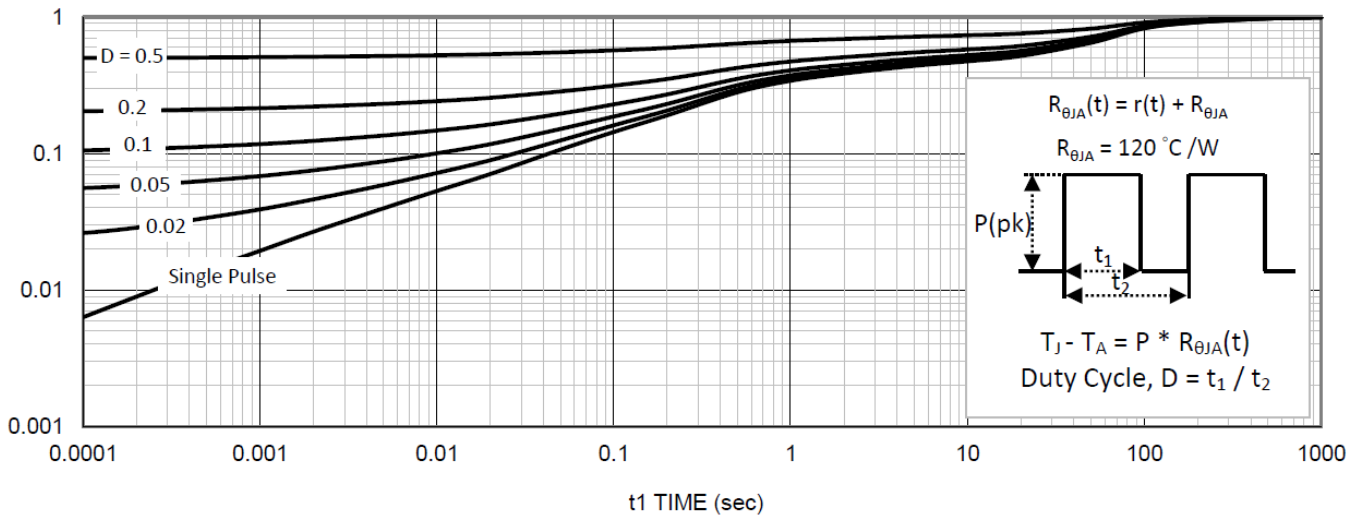
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient