

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 $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

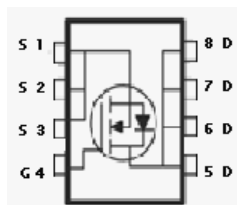
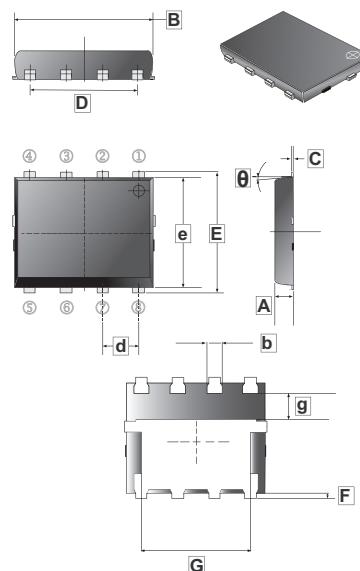
APPLICATION

- Industrial D/C/DC conversion circuits
- White LED boost converters
- Automotive systems

PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN5x6-8PP	3K	13 inch

DFN5x6-8PP



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.85	1	θ	0°	10°
B	5.2 BSC		b	0.3	0.5
C	0.15	0.25	d	1.27 BSC	
D	3.81 BSC		e	5.55 BSC	
E	6.05 BSC		g	1.2 TYP.	
F	0.25 BSC				
G	3.81 BSC				

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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	150	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current ¹	I_D	$T_A=25^\circ\text{C}$	8.3	A
		$T_A=70^\circ\text{C}$	6.7	A
Pulsed Drain Current ²	I_{DM}	50	A	
Continuous Source Current (Diode Conduction) ¹	I_S	7.1	A	
Power Dissipation ¹	P_D	$T_A=25^\circ\text{C}$	5	W
		$T_A=70^\circ\text{C}$	3.2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$	
Thermal Resistance Ratings				
Maximum Thermal Resistance from Junction to Ambient ¹	$R_{\theta JA}$	$t \leq 10$ sec	25	$^\circ\text{C} / \text{W}$
		Steady State	65	$^\circ\text{C} / \text{W}$

Notes:

1. The surface of the device is mounted on a 1" x 1" FR4 board.
2. The pulse width is limited by the maximum junction temperature.

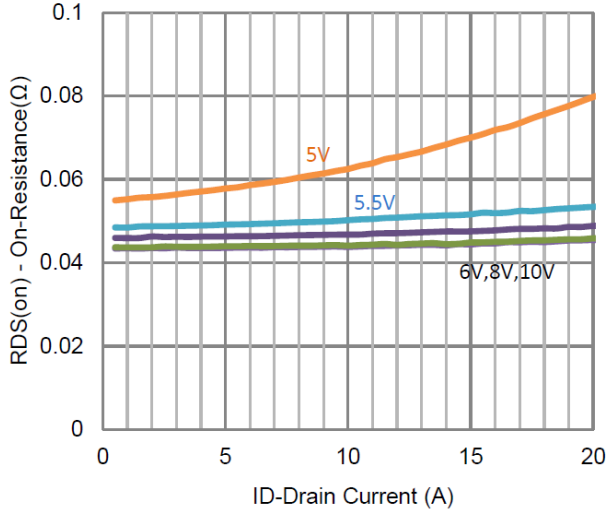
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static ¹						
Gate-Source 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	$V_{DS}=0\text{V}$, $V_{GS}= \pm 20\text{V}$
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	$I_{D(on)}$	15	-	-	A	$V_{DS}=5\text{V}$, $V_{GS}=10\text{V}$
Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	48	m Ω	$V_{GS}=10\text{V}$, $I_D=8.3\text{A}$
		-	-	54		$V_{GS}=5.5\text{V}$, $I_D=6.4\text{A}$
Forward Transconductance	g_{fs}	-	15	-	S	$V_{DS}=15\text{V}$, $I_D=8.3\text{A}$
Diode Forward Voltage	V_{SD}	-	0.74	-	V	$I_S=3.6\text{A}$, $V_{GS}=0$
Dynamic ¹						
Total Gate Charge	Q_g	-	58	-	nC	$V_{DS}=75\text{V}$ $V_{GS}=5.5\text{V}$ $I_D=8.3\text{A}$
Gate-Source Charge	Q_{gs}	-	17	-		
Gate-Drain Charge	Q_{gd}	-	35	-		
Input Capacitance	C_{iss}	-	4388	-	pF	$V_{DS}=15\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	260	-		
Reverse Transfer Capacitance	C_{rss}	-	239	-		
Turn-On Delay Time	$T_{d(on)}$	-	20	-	nS	$V_{DS}=75\text{V}$ $V_{GEN}=10\text{V}$ $I_D=8.3\text{A}$ $R_L=9.1\Omega$ $R_{GEN}=6\Omega$
Rise Time	T_r	-	35	-		
Turn-Off Delay Time	$T_{d(off)}$	-	122	-		
Fall Time	T_f	-	38	-		

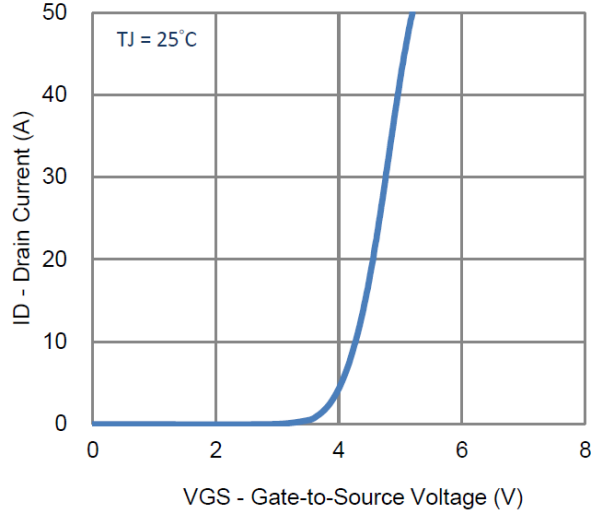
Notes:

1. Pulse test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

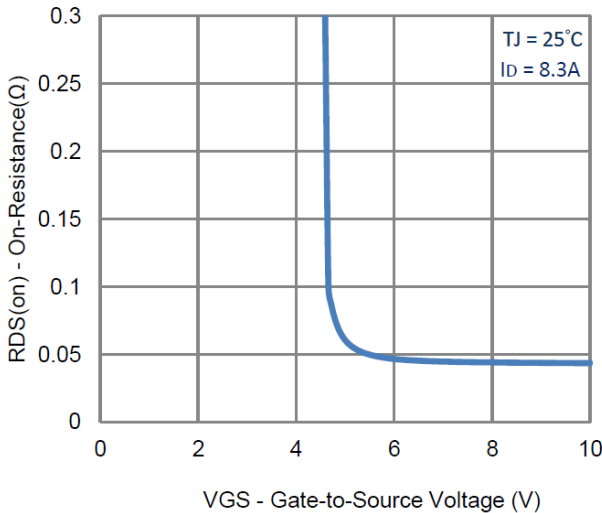
CHARACTERISTIC CURVE



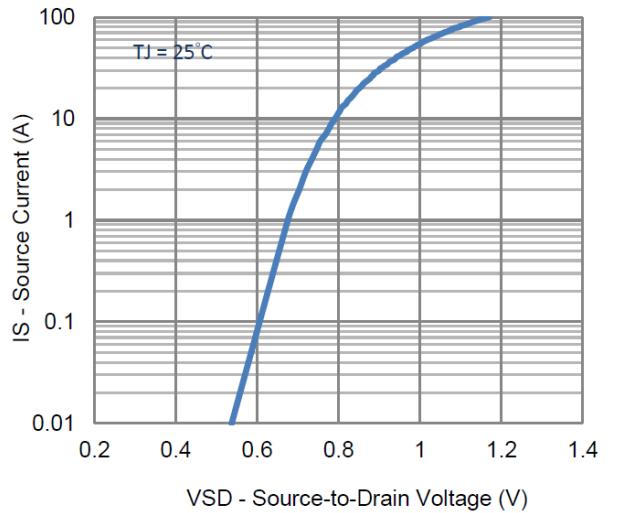
1. On-Resistance vs. Drain Current



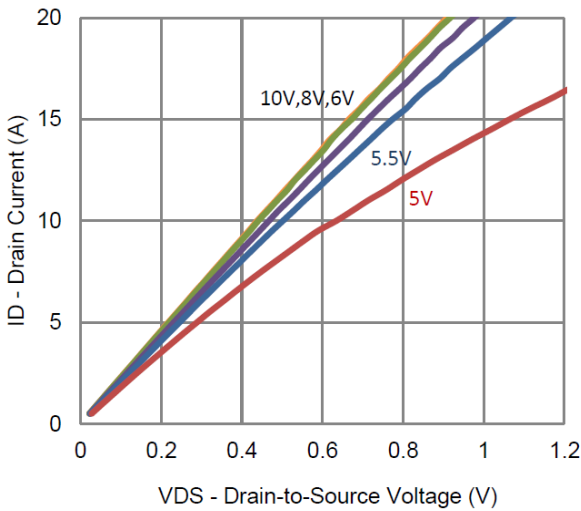
2. Transfer Characteristics



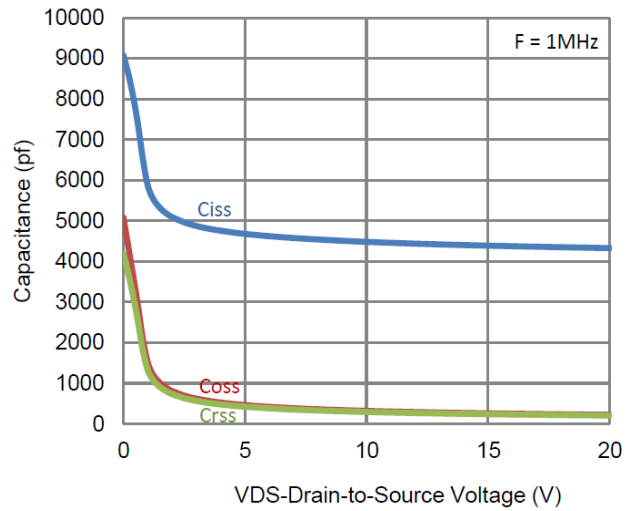
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

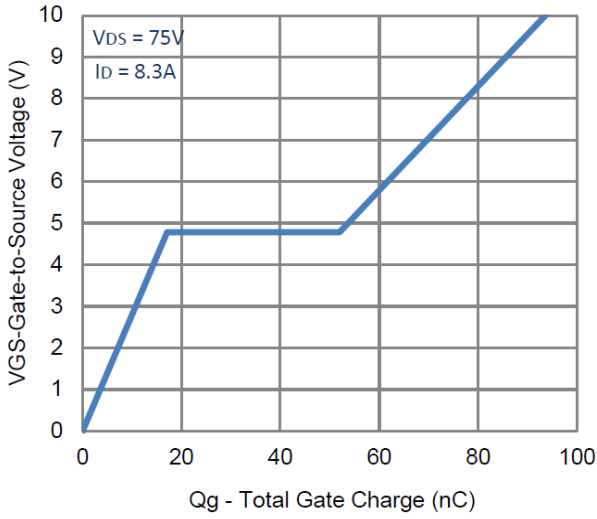


5. Output Characteristics

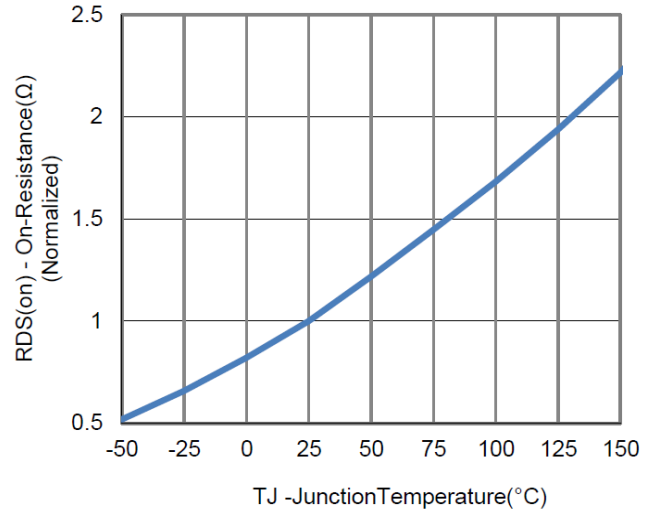


6. Capacitance

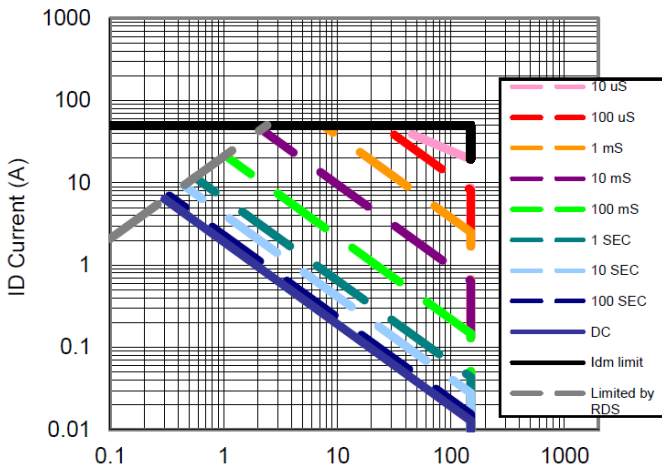
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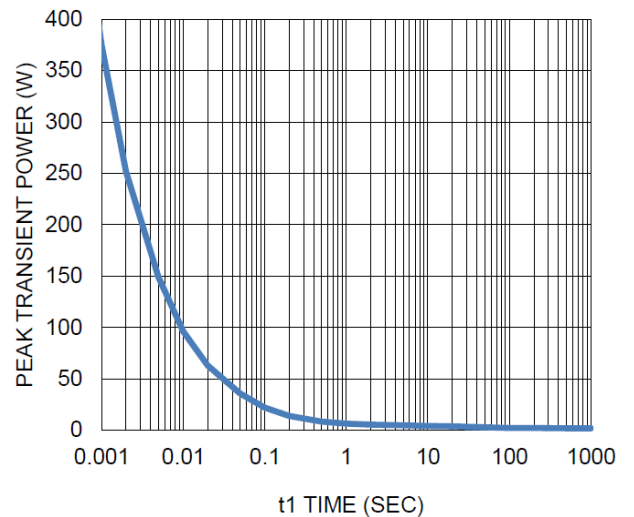
7. Gate Charge



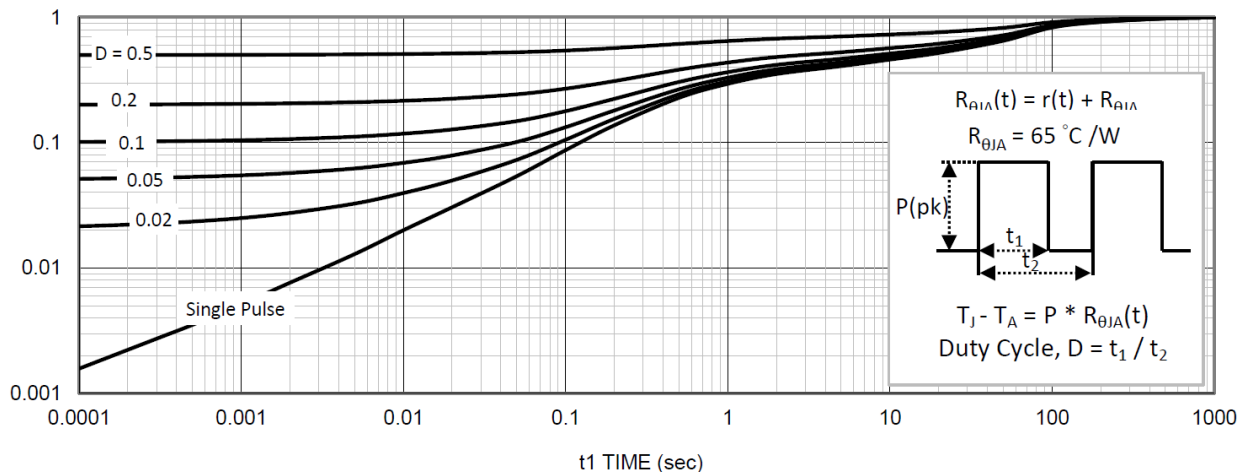
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient