

Features

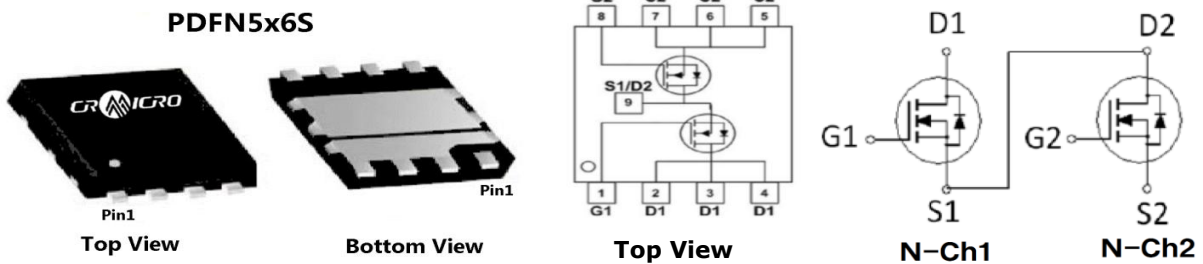
- Uses CRM(CQ) advanced Trench technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- Half Bridge Power MOSFET

Product Summary

Symbol	N-Ch1	N-Ch2
V_{DS}	40V	40V
$R_{DS(on)}$ typ.	8.5m Ω	8.5m Ω
I_D	48A	48A

Applications

- Synchronous Buck Converter
- Motor Drive

100% DVDS Tested
100% Avalanche Tested

Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRMM0414S	CRMM0414S	PDFN5x6S	Taping	N/A	N/A	4000pcs

Absolute Maximum Ratings

Parameter	Symbol	Maximum		Unit
		N-Ch1	N-Ch2	
Drain-source voltage	V_{DS}	40	40	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit)	I_D	48	48	A
Continuous drain current $T_C = 25^\circ\text{C}$ (Package limit)	I_D	48	48	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D\ pulse}$	190	190	A
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$)	E_{AS}	132	132	mJ
Gate-Source voltage	V_{GS}	± 20	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$) ¹	P_{tot}	38.6	38.6	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150		$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Typ	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	2.7	3.2	°C/W
SMD version, device on PCB ² Thermal resistance, junction – ambient	R_{thJA}	69.5	83.4	°C/W

NOTE:

 1.The power dissipation PD is based on $T_J(MAX)=150^{\circ}C$, using $\leq 10s$ junction-to-ambient thermal resistance.

 2.The value of R_{thJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}C$. The value in any given application depends on the user's specific board design.

N-Ch1&N-Ch2 Electrical Characteristic (at $T_J = 25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

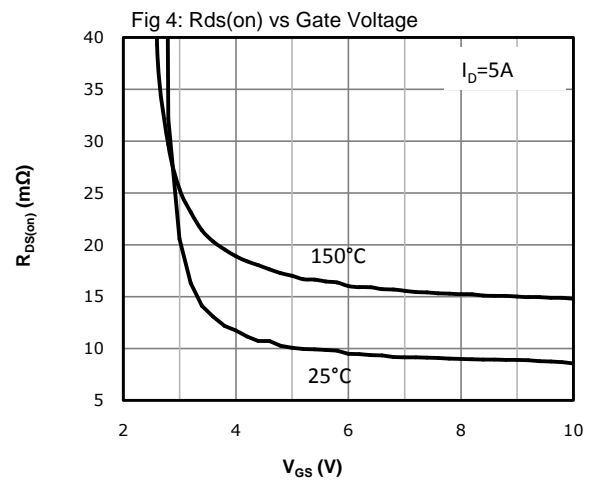
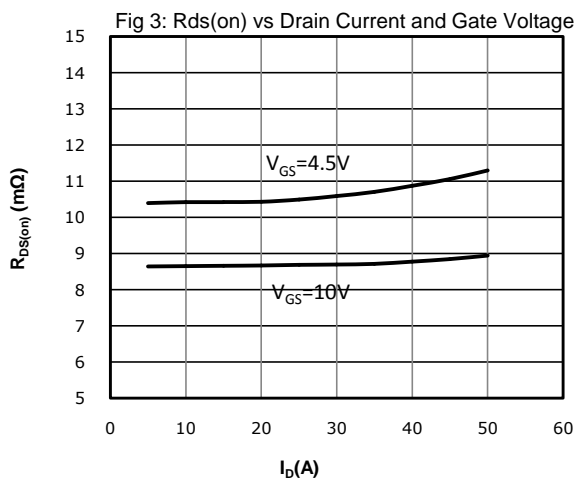
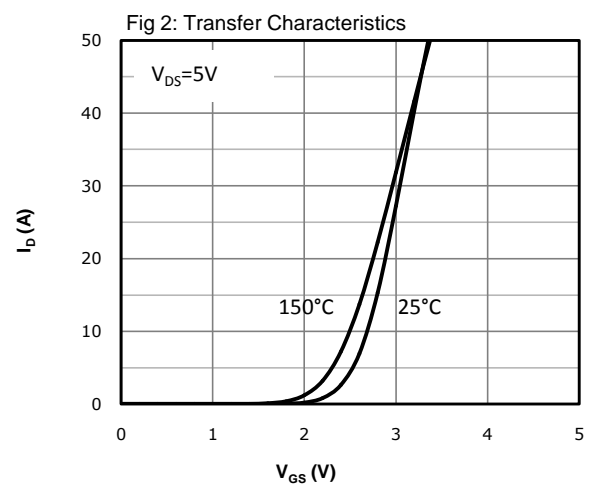
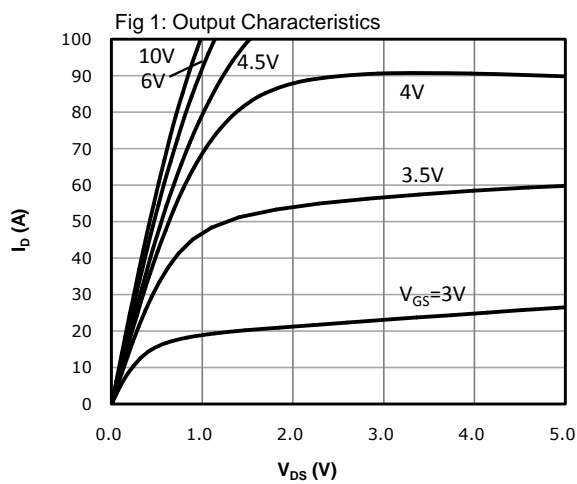
Drain-source breakdown voltage	BV_{DSS}	40	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate threshold voltage	$V_{GS(th)}$	1	1.5	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	0.08	1	μA	$V_{DS}=40V, V_{GS}=0V$ $T_J=25^{\circ}C$ $T_J=125^{\circ}C$
Gate-source leakage current	I_{GSS}	-	± 10	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	10.5	14.0	m Ω	$V_{GS}=4.5V, I_D=5A$ $V_{GS}=10V, I_D=5A$
Transconductance	g_{fs}	-	24.8	-	S	$V_{DS}=5V, I_D=5A$

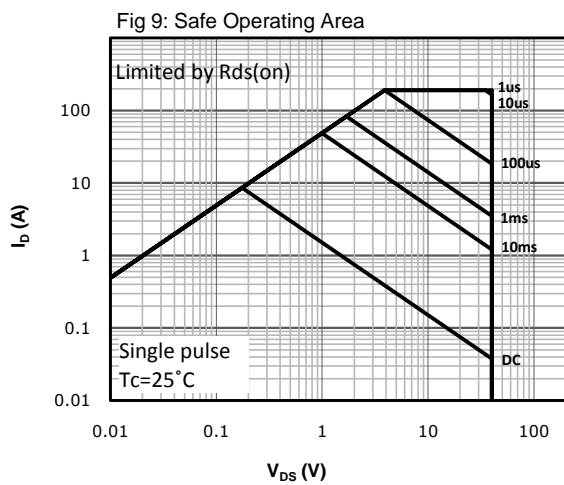
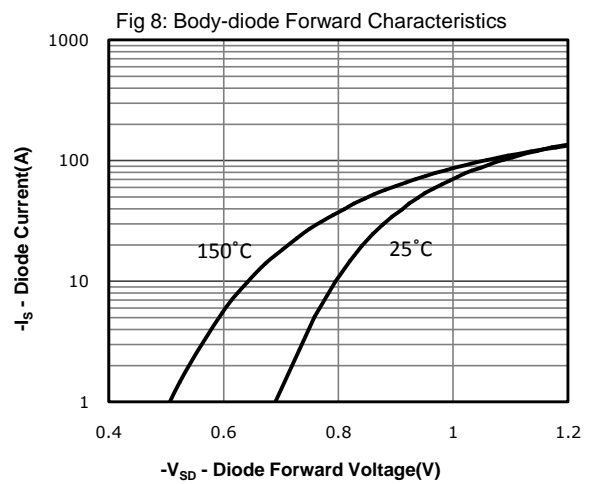
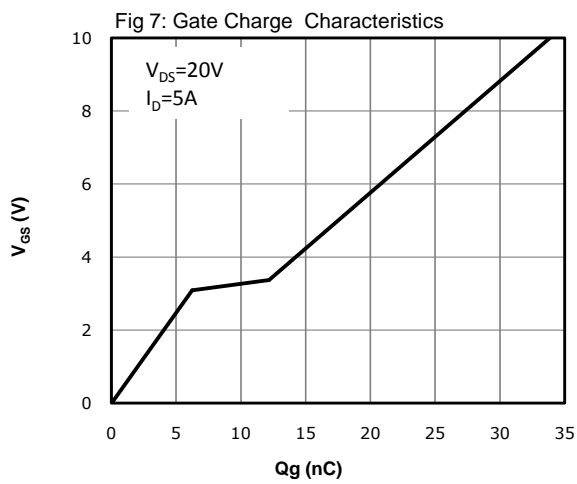
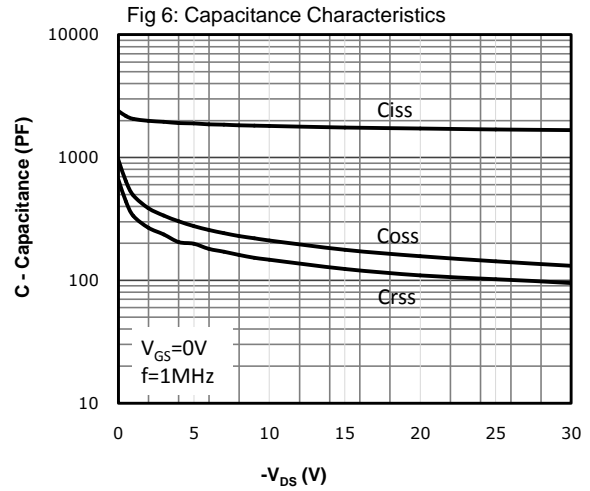
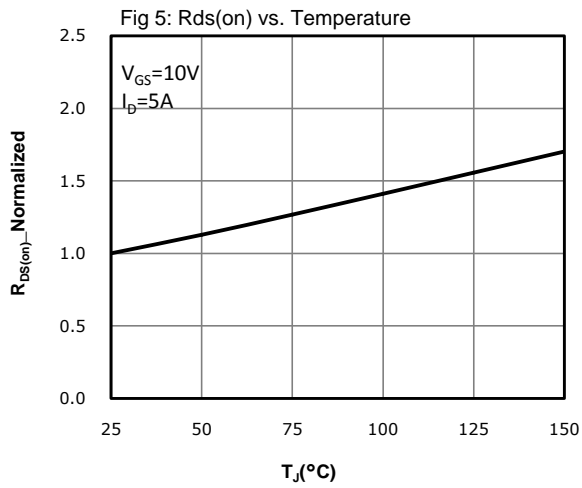
Dynamic Characteristic

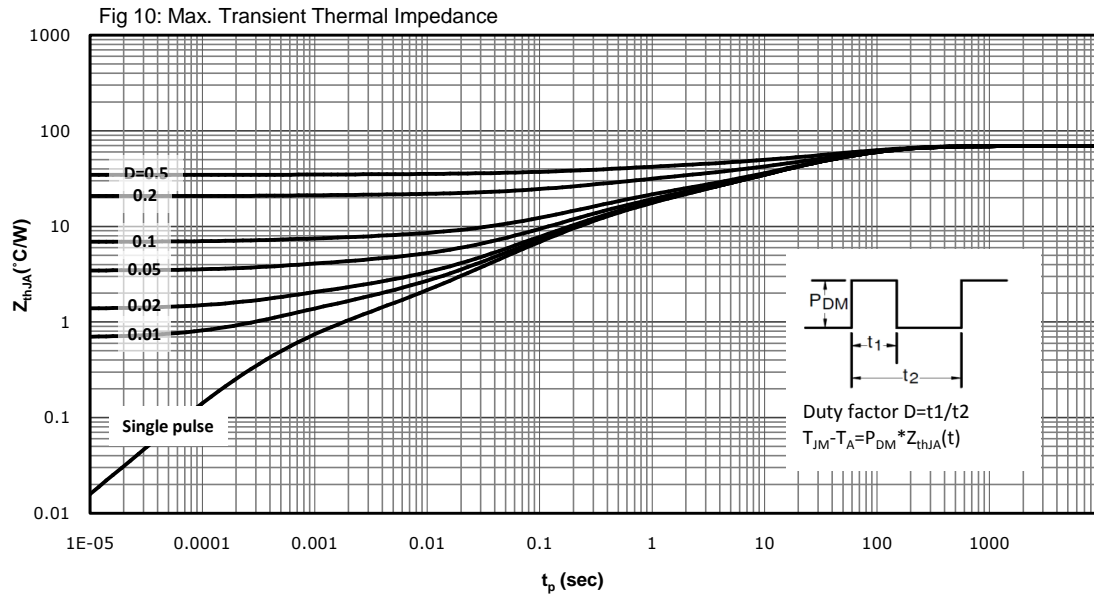
Input Capacitance	C_{iss}	-	1726	-	pF	$V_{GS}=0V, V_{DS}=20V, f=1MHz$
Output Capacitance	C_{oss}	-	157	-		
Reverse Transfer Capacitance	C_{rss}	-	110	-		
Gate Total Charge	Q_G	-	33.9	-	nC	$V_{GS}=10V, V_{DS}=20V, I_D=5A, f=1MHz$
Gate-Source charge	Q_{gs}	-	6.3	-		
Gate-Drain charge	Q_{gd}	-	5.9	-		
Turn-on delay time	$t_{d(on)}$	-	9.8	-	ns	$V_{GS}=10V, V_{DD}=20V, R_{G_ext}=2.7\Omega, I_D=5A$
Rise time	t_r	-	25.7	-		
Turn-off delay time	$t_{d(off)}$	-	29.1	-		
Fall time	t_f	-	23.5	-		
Gate resistance	R_G	-	1.26	-	Ω	$V_{GS}=0V, V_{DS}=0V, f=1MHz$

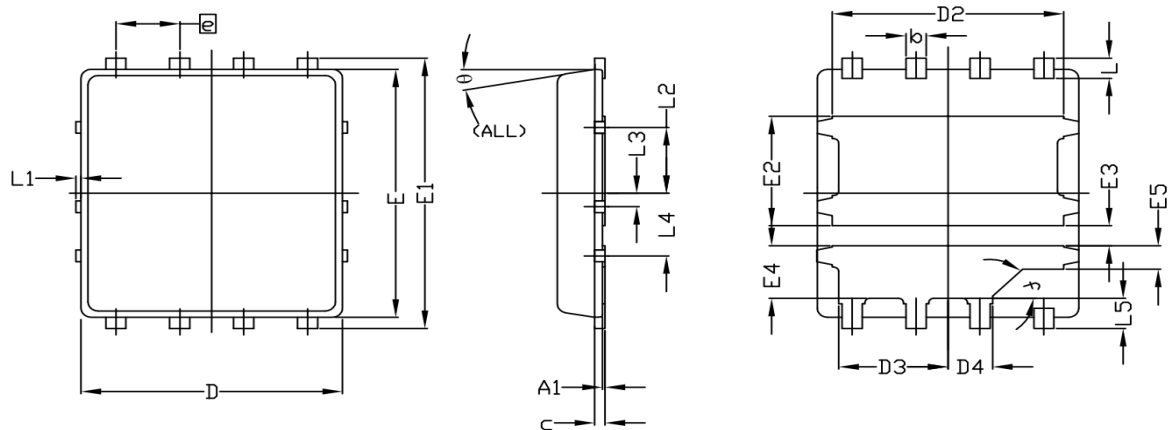
Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.81	1.2	V	$V_{GS}=0V, I_{SD}=10A$
Body Diode Reverse Recovery Time	t_{rr}	-	13.7	-	ns	$I_F=5A, dI/dt=100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	-	6.0	-	nC	

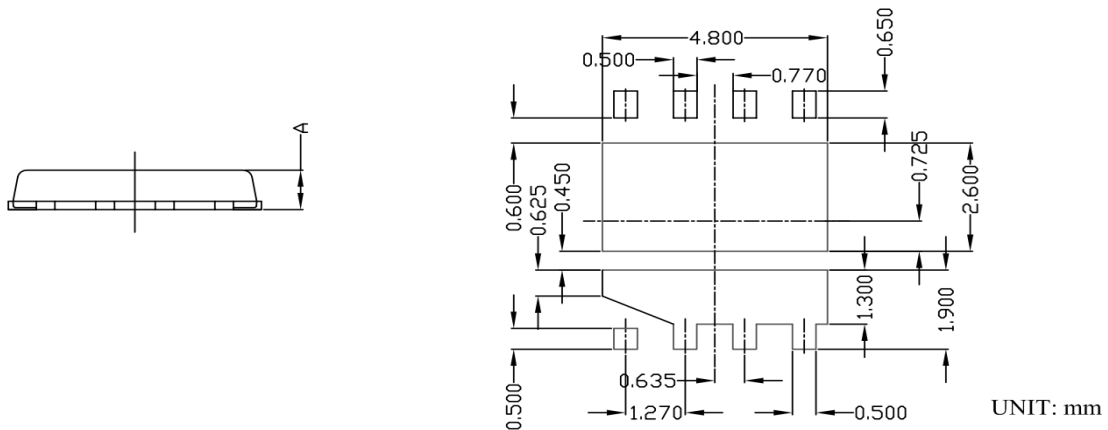
N-Ch1&N-Ch2 Typical Performance Characteristics






Package Outline: PDFN5x6S


RECOMMENDED LAND PATTERN



UNIT: mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.850	0.900	1.000	0.033	0.035	0.039
A1	0.000	----	0.050	0.000	----	0.002
b	0.350	0.400	0.450	0.014	0.016	0.018
c	0.150	0.200	0.250	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D2	4.500	4.600	4.700	0.177	0.181	0.185
D3	2.125	2.175	2.225	0.084	0.086	0.088
D4	0.835	0.885	0.935	0.033	0.035	0.037
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	2.400	2.450	2.500	0.094	0.096	0.098
E3	0.400	0.450	0.500	0.016	0.018	0.020
E4	1.125	1.175	1.225	0.044	0.046	0.048
E5	0.475	0.525	0.575	0.019	0.021	0.023
e	1.27 BSC			0.050 BSC		
L	0.350	0.450	0.550	0.014	0.018	0.022
L1	0.000	----	0.100	0.000	----	0.004
L2	1.375	1.475	1.575	0.054	0.058	0.062
L3	0.200	0.300	0.400	0.008	0.012	0.016
L4	1.300	1.400	1.500	0.051	0.055	0.059
L5	0.575	0.675	0.775	0.023	0.027	0.031
f	45°			45°		
θ	0°	----	10°	0°	----	10°

Revision History

Revision	Date	Major changes
1.0	2022/12/29	Release of formal version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

This product is suitable for reflow soldering up to 260°C, not very suitable for wave soldering.
The reliability of this product is not guaranteed under specific conditions when accepted by customers.

CRM(CQ) reserves the right to improve product design, function and reliability without notice.

单击下面可查看定价，库存，交付和生命周期等信息

[>>CRMICRO\(华润微\)](#)