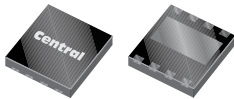


CDFG6511N

**SURFACE MOUNT GaN
N-CHANNEL
POWER FET
11 AMP, 650 VOLT**



Top View Bottom View

DFN8X8 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDFG6511N is a 650 Volt N-Channel GaN FET designed for high voltage, soft switching applications. This GaN FET combines high voltage capability with low $r_{DS(ON)}$ and low gate charge for optimal efficiency.

MARKING: C6511 L/C D/C**APPLICATIONS:**

- Switch-mode power supplies
- High power chargers
- Electric vehicle inverters

FEATURES:

- High voltage capability
- Low gate charge & $r_{DS(ON)}$
- Fast switching

MAXIMUM RATINGS: ($T_J=25^\circ\text{C}$ unless otherwise noted)

	SYMBOL		UNITS
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	-1.4 to +7.0	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	11.5	A
Pulsed Drain Current ($T_C=25^\circ\text{C}$)	I_{DM}	20.5	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	84	W
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	1.1	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS: ($T_J=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}	$V_{GS}=6.0\text{V}, V_{DS}=0$		60		μA
I_{GSSR}	$V_{GS}=1.0\text{V}, V_{DS}=0$		60		μA
I_{DSS}	$V_{DS}=650\text{V}, V_{GS}=0$		0.45	20	μA
BV_{DSS}	$V_{GS}=0, I_D=250\mu\text{A}$	650			V
$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=12.2\text{mA}$	1.2	1.7	2.5	V
V_{SD}	$V_{GS}=0, I_S=3.9\text{A}$		2.6		V
$r_{DS(ON)}$	$V_{GS}=6.0\text{V}, I_D=3.9\text{A}$		138	190	$\text{m}\Omega$
C_{iss}	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		96		pF
C_{oss}	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		30		pF
C_{rss}	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		0.5		pF
$C_{oss(er)}$	$V_{DS}=0$ to 400V, $V_{GS}=0$		43		pF
$C_{oss(tr)}$	$V_{DS}=0$ to 400V, $V_{GS}=0$		60		pF
$Q_g(\text{tot})$	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=3.9\text{A}$		2.8		nC
Q_{gd}	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=3.9\text{A}$		1.1		nC
Q_{gs}	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=3.9\text{A}$		0.25		nC

R2 (1-November 2023)

CDFG6511N

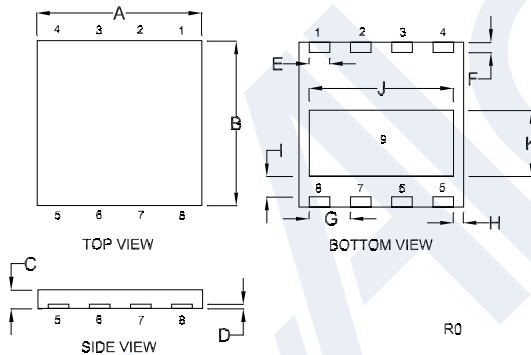
**SURFACE MOUNT GaN
N-CHANNEL
POWER FET
11 AMP, 650 VOLT**



ELECTRICAL CHARACTERISTICS - Continued: ($T_J=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$t_{d(on)}$	$V_{DS}=400\text{V}$, $V_{GS}=6.0\text{V}$, $I_D=8.0\text{A}$ $R_{G(on)}=10\Omega$, $L=318\mu\text{H}$	1.4	ns
$t_{d(off)}$	$V_{DS}=400\text{V}$, $V_{GS}=6.0\text{V}$, $I_D=8.0\text{A}$ $R_{G(on)}=10\Omega$, $L=318\mu\text{H}$	1.7	ns
t_r	$V_{DS}=400\text{V}$, $V_{GS}=6.0\text{V}$, $I_D=8.0\text{A}$ $R_{G(on)}=10\Omega$, $L=318\mu\text{H}$	4.0	ns
t_f	$V_{DS}=400\text{V}$, $V_{GS}=6.0\text{V}$, $I_D=8.0\text{A}$ $R_{G(on)}=10\Omega$, $L=318\mu\text{H}$	4.0	ns

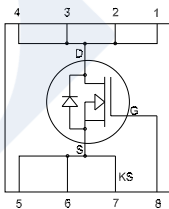
DFN8X8 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.307	0.323	7.80	8.20
B	0.307	0.323	7.80	8.20
C	0.031	0.039	0.80	1.00
D	0.006	0.010	0.15	0.25
E	0.037	0.041	0.95	1.05
F	0.018	0.022	0.45	0.55
G	0.071	0.087	1.80	2.20
H	0.018	0.022	0.45	0.55
I	0.037	0.041	0.95	1.05
J	0.268	0.283	6.80	7.20
K	0.120	0.132	3.05	3.35

DFN8X8 (REV: R0)

PIN CONFIGURATION



LEAD CODE:

- 1) Drain 5) Source
- 2) Drain 6) Source
- 3) Drain 7) Kelvin Source
- 4) Drain 8) Gate

Pins 5, 6, 7 are common to the pad (9)

MARKING: C6511 L/C D/C

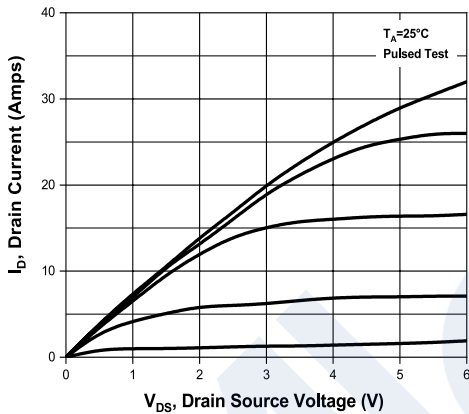
CDFG6511N

SURFACE MOUNT GaN
N-CHANNEL
POWER FET
11 AMP, 650 VOLT

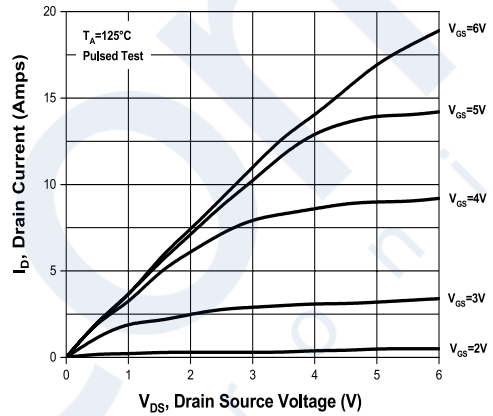


TYPICAL ELECTRICAL CHARACTERISTICS

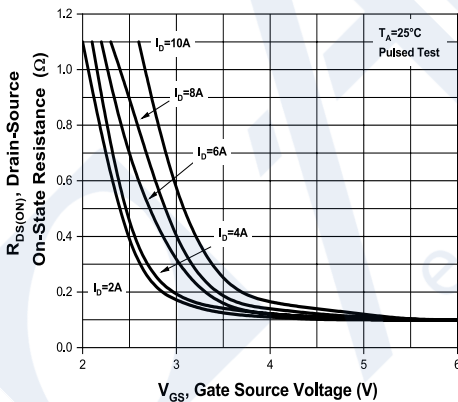
Typical Output Characteristics



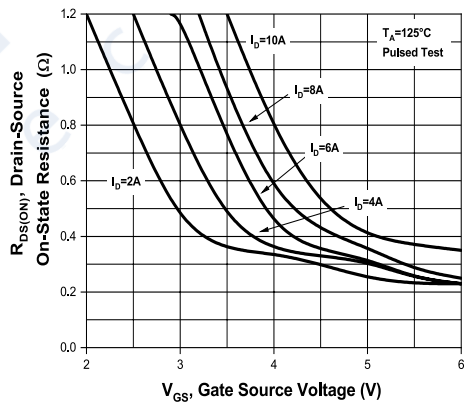
Typical Output Characteristics



Drain Source On Resistance



Drain Source On Resistance



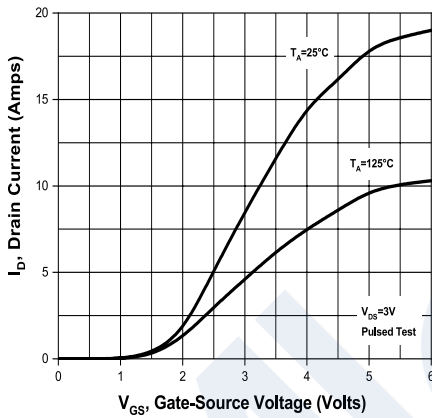
CDFG6511N

SURFACE MOUNT GaN
N-CHANNEL
POWER FET
11 AMP, 650 VOLT

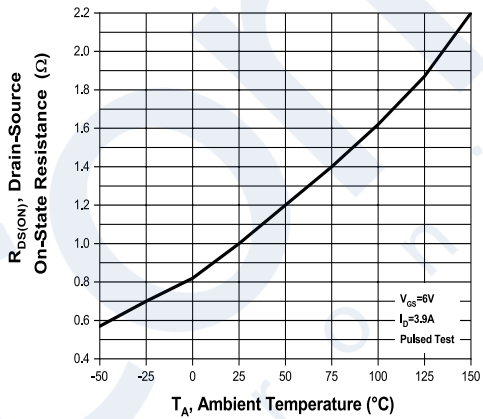


TYPICAL ELECTRICAL CHARACTERISTICS

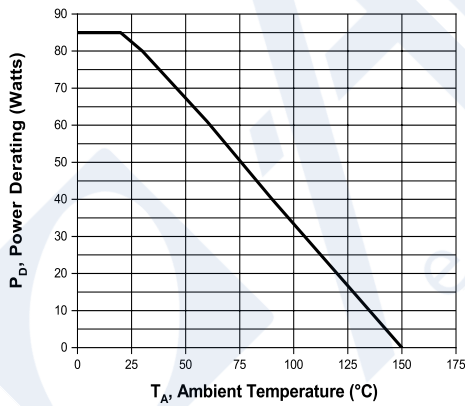
Transfer Characteristics



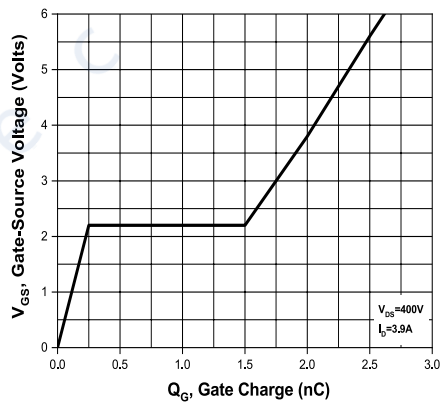
Drain Source Temperature Coefficient



Power Derating



Gate Capacitance Charge

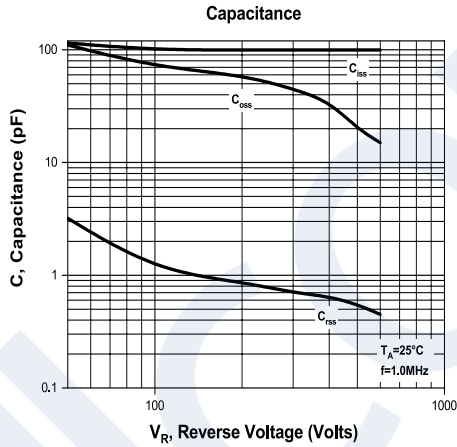


CDFG6511N

SURFACE MOUNT GaN
N-CHANNEL
POWER FET
11 AMP, 650 VOLT



TYPICAL ELECTRICAL CHARACTERISTICS



OUTSTANDING SUPPORT AND SUPERIOR SERVICES

PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

Worldwide Distributors:
www.centrasemi.com/wwdistributors

For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: www.centrasemi.com/terms