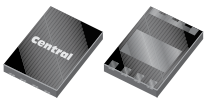
CDF56G6511N

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



Top View Bottom View

DFN5X6A CASE

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDF56G6511N 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 5X6 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°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°C)	I_D	11.5	A
Pulsed Drain Current (T_C=25°C)	I_{DM}	20.5	A
Power Dissipation (T_C=25°C)	P_D	84	W
Power Dissipation (T_A=25°C)	P_D	1.1	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS: (T_J=25°C unless otherwise noted)

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

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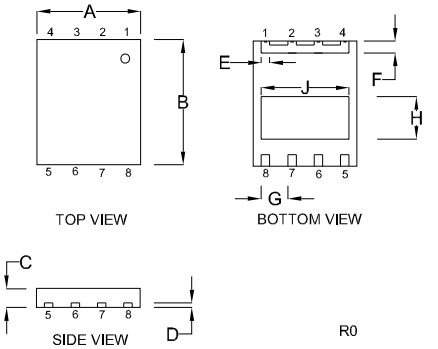
ELECTRICAL CHARACTERISTICS - Continued: (T_J=25°C unless otherwise noted)

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

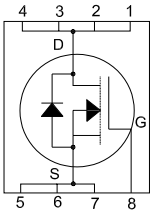
DFN5X6A CASE - MECHANICAL OUTLINE



DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.197		5.00	
B	0.236		6.00	
C	0.031	0.039	0.80	1.00
D	0.008		0.20	
E	0.012	0.020	0.30	0.50
F	0.018	0.030	0.45	0.75
G	0.050		1.27	
H	0.077	0.085	1.95	2.15
J	0.164	0.175	4.16	4.45

DFN5X6A (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

MARKING: C6511 5X6 L/C D/C

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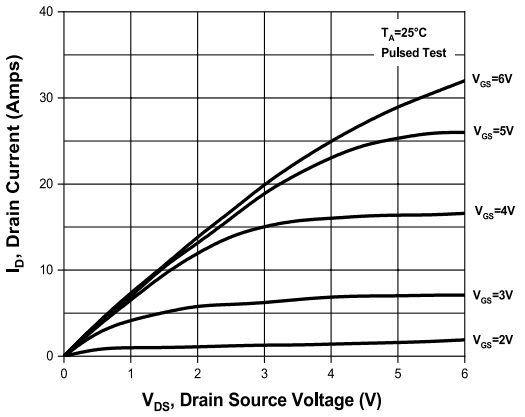
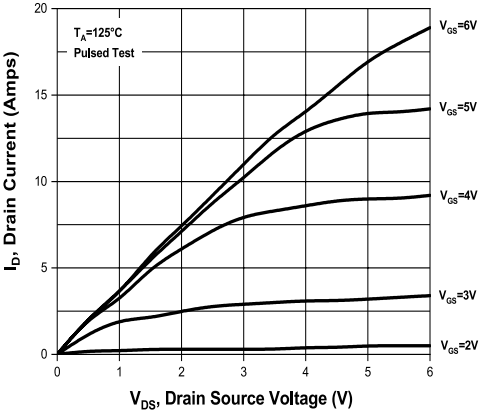
TYPICAL ELECTRICAL CHARACTERISTICS

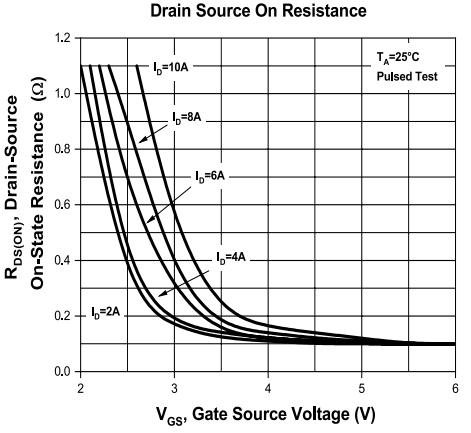
Typical Output Characteristics



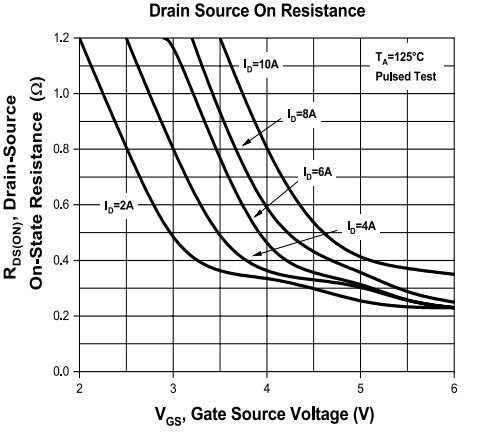
Typical Output Characteristics



Drain Source On Resistance



Drain Source On Resistance



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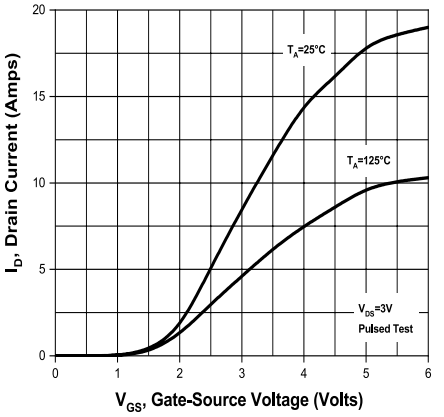
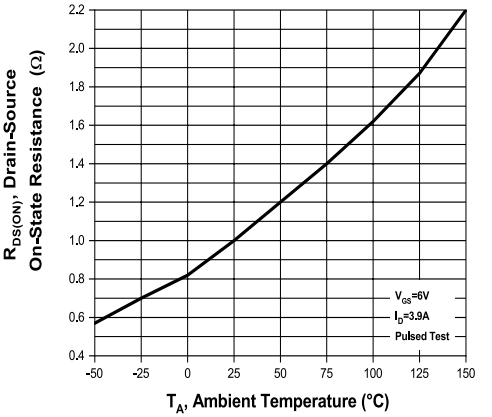
TYPICAL ELECTRICAL CHARACTERISTICS

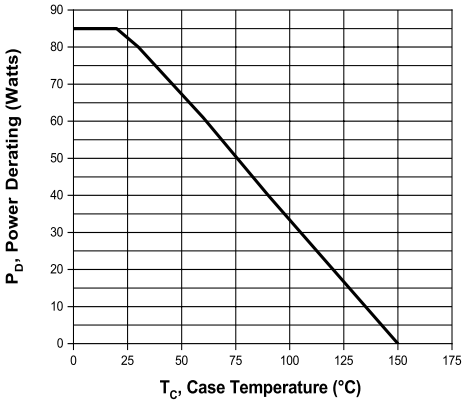
Transfer Characteristics



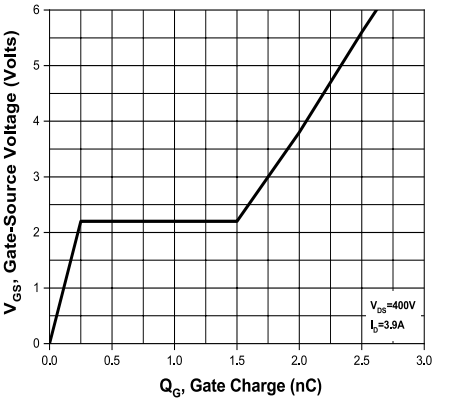
Drain Source Temperature Coefficient



Power Derating



Gate Capacitance Charge



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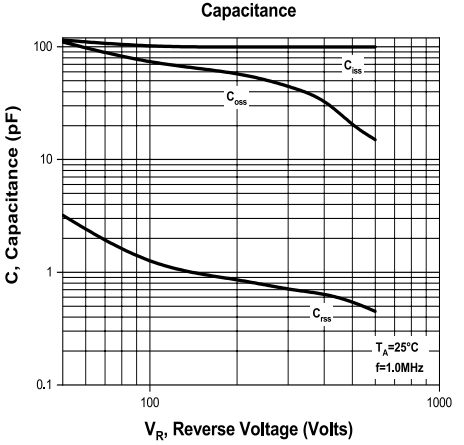
TYPICAL ELECTRICAL CHARACTERISTICS



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.centralsemi.com

Worldwide Field Representatives:
www.centralsemi.com/wwreps

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