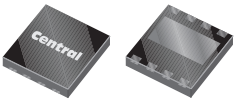
CDFG6558N

SURFACE MOUNT GaN
N-CHANNEL
POWER FET

29 AMP, 650 VOLT



Top View Bottom View

DFN8X8 CASE

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DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDFG6558N 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: C6558 8X8 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}	-6.0 to +7.0	V
Continuous Drain Current (T_C=25°C)	I_D	29	A
Pulsed Drain Current (T_C=25°C)	I_{DM}	58	A
Power Dissipation (T_C=25°C)	P_D	188	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		163		μA
I_{GSSR}	V_{GS}=1.0V, V_{DS}=0		163		μA
I_{DSS}	V_{DS}=650V, V_{GS}=0		5	65	μA
$V_{gs(th)}$	V_{GS}=V_{DS}, I_D=30.7mA	1.2	1.7	2.5	V
V_{SD}	V_{GS}=0, I_S=8.0A		2.3		V
$r_{DS(ON)}$	V_{GS}=6.0V, I_D=8.0A		60	80	mΩ
R_G	f=5MHz; open drain		3		Ω
C_{iss}	V_{DS}=400V, V_{GS}=0, f=100kHz		225		pF
C_{oss}	V_{DS}=400V, V_{GS}=0, f=100kHz		70		pF
C_{rss}	V_{DS}=400V, V_{GS}=0, f=100kHz		0.5		pF
$C_{o(er)}$	V_{DS}=0 to 400V, V_{GS}=0		105		pF
$C_{o(tr)}$	V_{DS}=0 to 400V, V_{GS}=0		150		pF
Q_{oss}	V_{DS}=0 to 400V, V_{GS}=0		60		nC
Q_g	V_{DS}=400V, V_{GS}=0V to 6V, I_D=8A		6.2		nC
Q_{gs}	V_{DS}=400V, V_{GS}=0V to 6V, I_D=8A		0.5		nC
Q_{gd}	V_{DS}=400V, V_{GS}=0V to 6V, I_D=8A		2.2		nC

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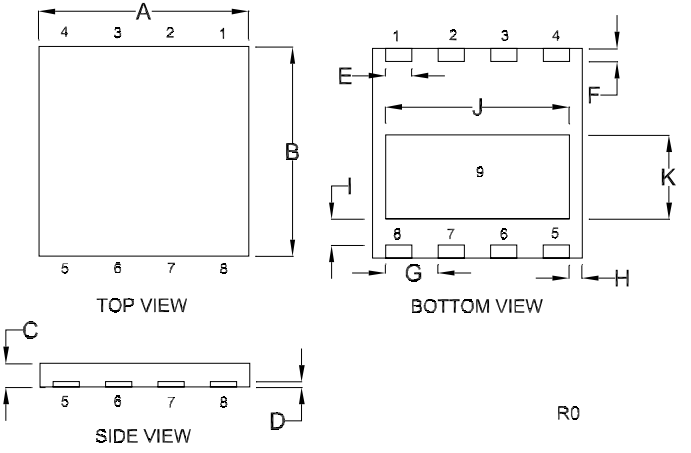
58 AMP, 650 VOLT

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

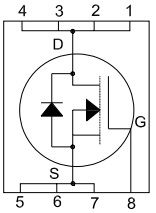
SYMBOL	TEST CONDITIONS	TYP	UNITS
$t_{d(on)}$	V_{DS}=400V, V_{GS}=6.0V, $R_{G(OFF)}$=2Ω, $R_{G(on)}$=10Ω, L=318μH, I_D=16A	3.0	ns
$t_{d(off)}$	V_{DS}=400V, V_{GS}=6.0V, $R_{G(OFF)}$=2Ω, $R_{G(on)}$=10Ω, L=318μH, I_D=16A	5.0	ns
t_r	V_{DS}=400V, V_{GS}=6.0V, $R_{G(OFF)}$=2Ω, $R_{G(on)}$=10Ω, L=318μH, I_D=16A	4.0	ns
t_f	V_{DS}=400V, V_{GS}=6.0V, $R_{G(OFF)}$=2Ω, $R_{G(on)}$=10Ω, L=318μH, I_D=16A	4.0	ns

DFN8X8 CASE - MECHANICAL OUTLINE



DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	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)



LEAD CODE:
1) Drain 5) Source
2) Drain 6) Source
3) Drain 7) Kelvin Source
4) Drain 8) Gate
9) Source
Pins 5, 6, 7 are common to the pad (pin 9)

MARKING: C6558 8X8 L/C D/C

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