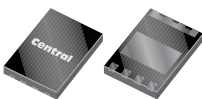


CDF56G6517N

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



Top View Bottom View

**DFN5X6A CASE**



[www.centrasemi.com](http://www.centrasemi.com)

#### DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDF56G6517N 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: C6517 5X6**

#### 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 ( $T_C=25^{\circ}\text{C}$ )	$I_D$	17	A
Pulsed Drain Current ( $T_C=25^{\circ}\text{C}$ )	$I_{DM}$	32	A
Power Dissipation ( $T_C=25^{\circ}\text{C}$ )	$P_D$	113	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
$I_{GSSF}, I_{GSSR}$	$V_{GS}=6.0\text{V}, V_{DS}=0$		70		$\mu\text{A}$
$I_{DSS}$	$V_{DS}=650\text{V}, V_{GS}=0$		0.6	25	$\mu\text{A}$
$BV_{DSS}$	$V_{GS}=0, I_D=250\mu\text{A}$	650			V
$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=17.2\text{mA}$	1.2	1.7	2.5	V
$V_{SD}$	$V_{GS}=0, I_S=5.0\text{A}$		2.4		V
$r_{DS(ON)}$	$V_{GS}=6.0\text{V}, I_D=5.0\text{A}$		106	140	$\text{m}\Omega$
$C_{iss}$	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		125		pF
$C_{oss}$	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		41		pF
$C_{rss}$	$V_{DS}=400\text{V}, V_{GS}=0, f=100\text{kHz}$		0.4		pF
$C_{oss(er)}$	$V_{DS}=0$ to 400V, $V_{GS}=0$		59		pF
$C_{oss(tr)}$	$V_{DS}=0$ to 400V, $V_{GS}=0$		82		pF
$Q_g(\text{tot})$	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=5.0\text{A}$		3.5		nC
$Q_{gd}$	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=5.0\text{A}$		1.2		nC
$Q_{gs}$	$V_{DS}=400\text{V}, V_{GS}=0$ to 6.0V, $I_D=5.0\text{A}$		0.3		nC

**CDF56G6517N**

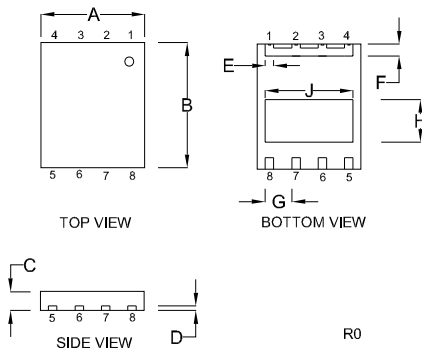
**SURFACE MOUNT GaN  
N-CHANNEL  
POWER FET  
17 AMP, 650 VOLT**



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

SYMBOL	TEST CONDITIONS	TYP	UNITS
$t_{d(on)}$	$V_{DS}=400\text{V}$ , $V_{GS}=6.0\text{V}$ , $I_D=10\text{A}$ $R_{G(on)}=10\Omega$ , $L=318\mu\text{H}$	3.0	ns
$t_{d(off)}$	$V_{DS}=400\text{V}$ , $V_{GS}=6.0\text{V}$ , $I_D=10\text{A}$ $R_{G(on)}=10\Omega$ , $L=318\mu\text{H}$	4.0	ns
$t_r$	$V_{DS}=400\text{V}$ , $V_{GS}=6.0\text{V}$ , $I_D=10\text{A}$ $R_{G(on)}=10\Omega$ , $L=318\mu\text{H}$	5.0	ns
$t_f$	$V_{DS}=400\text{V}$ , $V_{GS}=6.0\text{V}$ , $I_D=10\text{A}$ $R_{G(on)}=10\Omega$ , $L=318\mu\text{H}$	4.0	ns

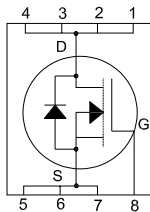
**DFN5X6A CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	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: C6517 5X6**