CDM7-600LR

**SURFACE MOUNT SILICON
N-CHANNEL
LR POWER MOSFET
7.0 AMP, 600 VOLT**

ULTRAMOS™

DPAK CASE

Central™
Semiconductor Corp.

DESCRIPTION:
The CENTRAL SEMICONDUCTOR CDM7-600LR is a 600 Volt N-Channel MOSFET designed for high voltage, fast switching applications such as Power Factor Correction (PFC), lighting and power inverters. This UltraMOS™ MOSFET combines high voltage capability with ultra low $r_{DS(ON)}$, low threshold voltage, and low gate charge for optimal efficiency.

MARKING: FULL PART NUMBER

APPLICATIONS:
• Power Factor Correction
• Alternative energy inverters
• Solid State Lighting (SSL)

FEATURES:
• High voltage capability (V_{DS}=600V)
• Low gate charge (Q_{gs}=2.62nC TYP)
• Ultra low $r_{DS(ON)}$ (0.53Ω TYP)

MAXIMUM RATINGS: (T_C=25°C unless otherwise noted)

	SYMBOL		UNITS
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	30	V
Continuous Drain Current (Steady State)	I_D	7.0	A
Maximum Pulsed Drain Current, tp=10µs	I_{DM}	28	A
Continuous Source Current (Body Diode)	I_S	7.0	A
Maximum Pulsed Source Current (Body Diode)	I_{SM}	28	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	145	mJ
Power Dissipation	P_D	60	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	°C
Thermal Resistance	Θ_{JC}	2.08	°C/W
Thermal Resistance	Θ_{JA}	110	°C/W

Note 1: L=30mH, I_{AS}=3.0A, V_{DD}=100V, R_G=25Ω, Initial T_J=25°C

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}, I_{GSSR}	V_{GS}=30V, V_{DS}=0			100	nA
I_{DSS}	V_{DS}=600V, V_{GS}=0		0.065	1.0	µA
BV_{DSS}	V_{GS}=0, I_D=250µA	600			V
$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250µA	2.0	3.0	4.0	V
V_{SD}	V_{GS}=0, I_S=7.0A		0.89	1.4	V
$r_{DS(ON)}$	V_{GS}=10V, I_D=3.5A		0.53	0.58	Ω
C_{rss}	V_{DS}=100V, V_{GS}=0, f=1.0MHz		1.94		pF
C_{iss}	V_{DS}=100V, V_{GS}=0, f=1.0MHz		440		pF
C_{oss}	V_{DS}=100V, V_{GS}=0, f=1.0MHz		33		pF

R2 (10-August 2015)

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

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(tot)}$	V_{DS}=480V, V_{GS}=10V, I_D=7.0A (Note 2)	14.5	nC
Q_{gs}	V_{DS}=480V, V_{GS}=10V, I_D=7.0A (Note 2)	2.62	nC
Q_{gd}	V_{DS}=480V, V_{GS}=10V, I_D=7.0A (Note 2)	7.4	nC
$t_{d(on)}$	V_{DD}=300V, V_{GS}=10V, I_D=7.0A, R_G=24Ω (Note 2)	9.4	ns
t_r	V_{DD}=300V, V_{GS}=10V, I_D=7.0A, R_G=24Ω (Note 2)	26	ns
$t_{d(off)}$	V_{DD}=300V, V_{GS}=10V, I_D=7.0A, R_G=24Ω (Note 2)	44	ns
t_f	V_{DD}=300V, V_{GS}=10V, I_D=7.0A, R_G=24Ω (Note 2)	26	ns
t_{rr}	V_{GS}=0, I_S=7.0A, di/dt=100A/µs (Note 2)	283	ns
Q_{rr}	V_{GS}=0, I_S=7.0A, di/dt=100A/µs (Note 2)	2.73	µC

Note 2: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%

DPAK CASE - MECHANICAL OUTLINE
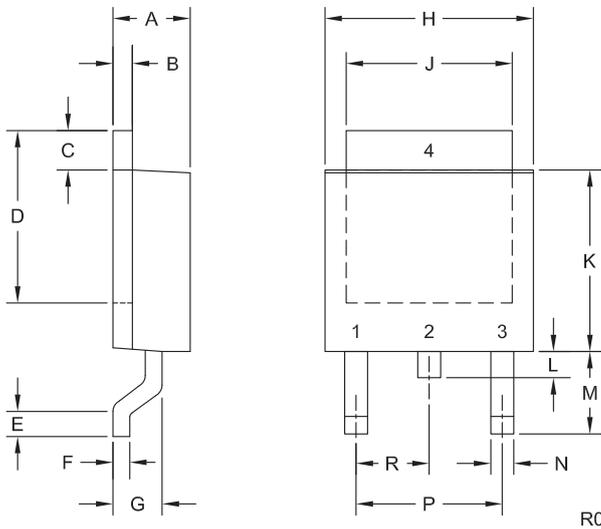
DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.083	0.108	2.10	2.75
B	0.016	0.032	0.40	0.81
C	0.035	0.063	0.89	1.60
D	0.203	0.228	5.15	5.79
E	0.020	-	0.51	-
F	0.018	0.024	0.45	0.60
G	0.051	0.071	1.30	1.80
H	0.248	0.268	6.30	6.81
J	0.197	0.217	5.00	5.50
K	0.209	0.245	5.30	6.22
L	0.025	0.040	0.64	1.02
M	0.090	0.115	2.30	2.91
N	0.012	0.045	0.30	1.14
P	0.180		4.60	
R	0.090		2.30	

DPAK (REV: R0)

R0

PIN CONFIGURATION
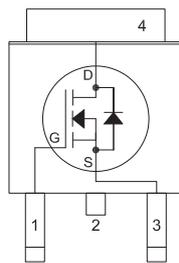
LEAD CODE:
1) Gate
2) Drain
3) Source
4) Drain
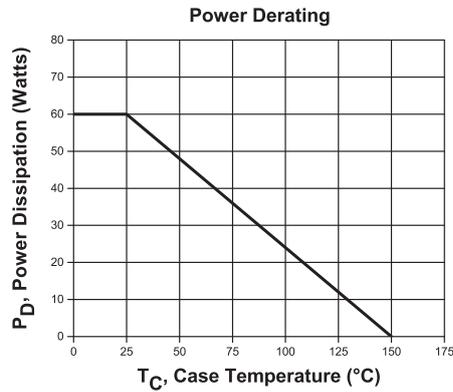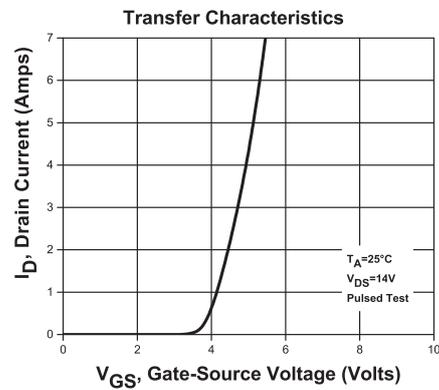Pin 2 is common to the tab (4)

MARKING: FULL PART NUMBER

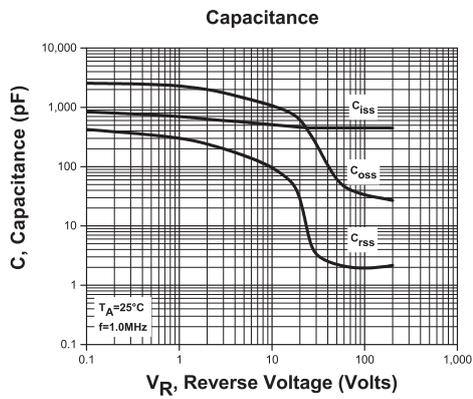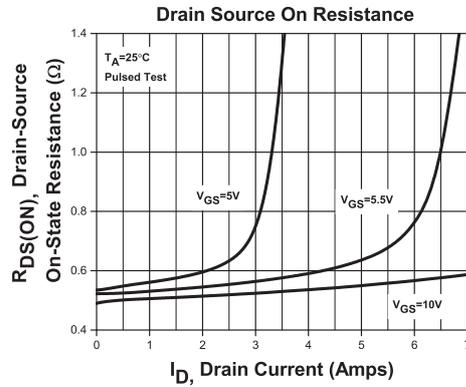R2 (10-August 2015)

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TYPICAL ELECTRICAL CHARACTERISTICS

Output Characteristics

I_D, Drain Current (Amps)

T_A=25°C
Pulsed Test

V_{GS}=5.5V

V_{GS}=5V

V_{GS}=4V

V_{DS}, Drain-Source Voltage (Volts)

Drain Source On Resistance

$R_{DS(ON)}$, Drain-Source On-State Resistance (Ω)

T_A=25°C
Pulsed Test

V_{GS}=5V

V_{GS}=5.5V

V_{GS}=10V

I_D, Drain Current (Amps)

Capacitance

C, Capacitance (pF)

C_{iss}

C_{oss}

C_{rss}

T_A=25°C
f=1.0MHz

V_R, Reverse Voltage (Volts)

Transfer Characteristics

I_D, Drain Current (Amps)

T_A=25°C
V_{DS}=14V
Pulsed Test

V_{GS}, Gate-Source Voltage (Volts)

Power Derating

P_D, Power Dissipation (Watts)

T_C, Case Temperature (°C)

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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

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