CDM7-650

SURFACE MOUNT SILICON N-CHANNEL MEDIUM POWER MOSFET 7.0 AMP, 650 VOLT



DPAK CASE

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DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDM7-650 is a 650 volt N-Channel MOSFET designed for high voltage, fast switching applications such as Power Factor Correction (PFC), lighting and power inverters. This MOSFET combines high voltage capability with 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

FEATURES:

- High voltage capability (V_{DS}=650V)
- Low gate charge (Q_{gs}=5.0nC)
- Low $r_{DS(ON)}$ (1.35Ω)

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

	SYMBOL		UNITS
Drain-Source Voltage	V_{DS}	650	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}	435	mJ
Power Dissipation	P_D	1.12	W
Power Dissipation (T_C=25°C)	P_D	140	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	°C
Thermal Resistance	Θ_{JC}	0.89	°C/W
Thermal Resistance	Θ_{JA}	110	°C/W

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}, I_{GSSR}	V_{GS}=30V, V_{DS}=0		10	100	nA
I_{DSS}	V_{DS}=650V, V_{GS}=0		0.03	1.0	μA
BV_{DSS}	V_{GS}=0, I_D=250μA	650			V
$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	2.0	2.88	4.0	V
V_{SD}	V_{GS}=0, I_S=7.0A		0.88	1.4	V
$r_{DS(ON)}$	V_{GS}=10V, I_D=3.5A		1.35	1.5	Ω
C_{rss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		0.8		pF
C_{iss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		754		pF
C_{oss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		97		pF

Notes: (1) L=30mH, I_{AS}=5.25A, V_{DD}=50V, R_G=25Ω, Initial T_J=25°C

R2 (2-July 2014)

CDM7-650

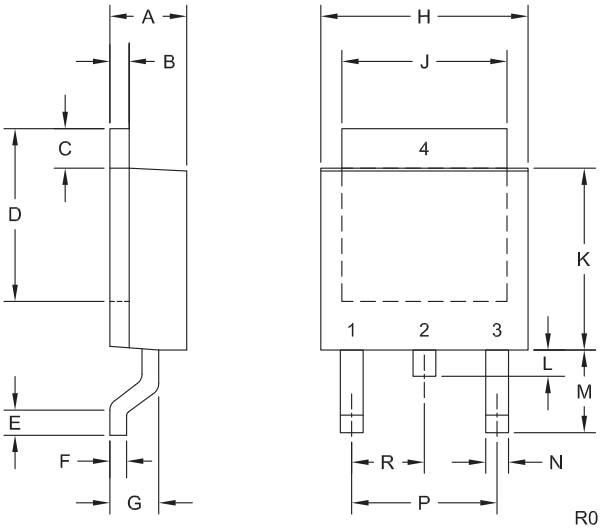
SURFACE MOUNT SILICON
N-CHANNEL
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7.0 AMP, 650 VOLT

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

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(tot)}$	V_{DS}=520V, V_{GS}=10V, I_D=7.0A (Note 2)	16.8	nC
Q_{gs}	V_{DS}=520V, V_{GS}=10V, I_D=7.0A (Note 2)	5.0	nC
Q_{gd}	V_{DS}=520V, V_{GS}=10V, I_D=7.0A (Note 2)	6.0	nC
t_d	V_{DD}=325V, I_D=7.0A, R_G=25Ω (Note 2)	14	ns
t_r	V_{DD}=325V, I_D=7.0A, R_G=25Ω (Note 2)	28	ns
t_s	V_{DD}=325V, I_D=7.0A, R_G=25Ω (Note 2)	38	ns
t_f	V_{DD}=325V, I_D=7.0A, R_G=25Ω (Note 2)	28	ns
t_{rr}	V_{GS}=0, I_S=7.0A, di/dt=100A/μs (Note 2)	493	ns
Q_{rr}	V_{GS}=0, I_S=7.0A, di/dt=100A/μs (Note 2)	2.99	μC

Notes: (2) Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

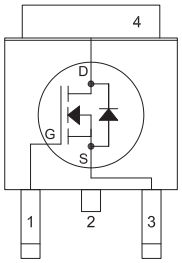
DPAK CASE - MECHANICAL OUTLINE



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)

PIN CONFIGURATION



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

MARKING: FULL PART NUMBER

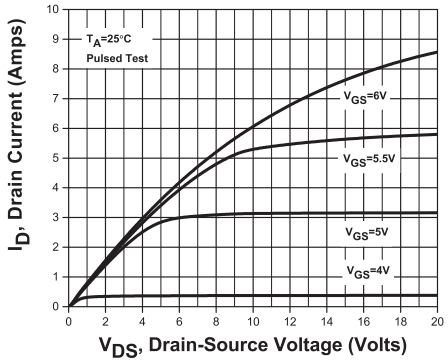
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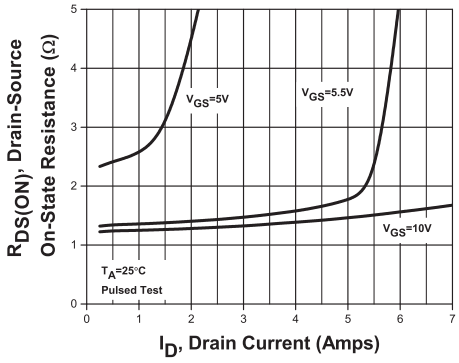
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TYPICAL ELECTRICAL CHARACTERISTICS

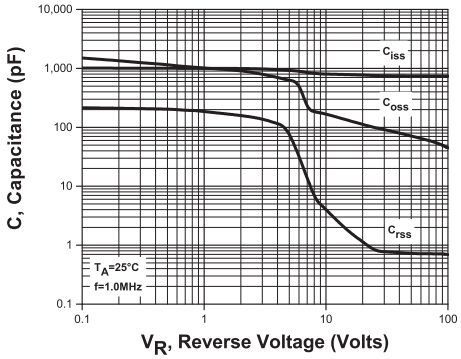
Output Characteristics



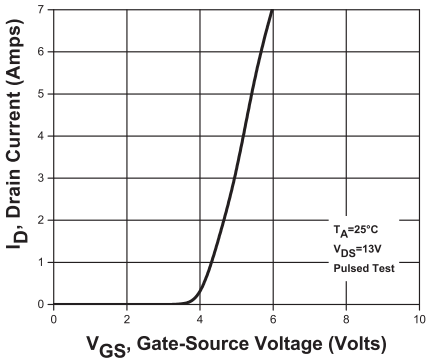
Drain Source On Resistance



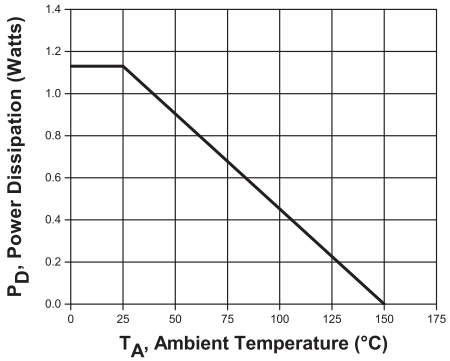
Capacitance



Transfer Characteristics



Power Derating



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

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