CDM4-650

SURFACE MOUNT SILICON N-CHANNEL MEDIUM POWER MOSFET 4.0 AMP, 650 VOLT

DPAK CASE

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDM4-650 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}=3.0nC)
- Low $r_{DS(ON)}$ (2.44Ω)

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	4.0	A
Maximum Pulsed Drain Current, tp=10μs	I_{DM}	16	A
Continuous Source Current (Body Diode)	I_S	4.0	A
Maximum Pulsed Source Current (Body Diode)	I_{SM}	16	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	202	mJ
Power Dissipation	P_D	0.62	W
Power Dissipation (T_C=25°C)	P_D	77	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	°C
Thermal Resistance	Θ_{JC}	1.62	°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	3.4	4.0	V
V_{SD}	V_{GS}=0, I_S=4.0A		0.87	1.4	V
$r_{DS(ON)}$	V_{GS}=10V, I_D=2.0A		2.44	2.7	Ω
C_{rss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		1.0		pF
C_{iss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		463		pF
C_{oss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		60		pF

Notes: (1) L=30mH, I_{AS}=3.6A, V_{DD}=50V, R_G=25Ω, Initial T_J=25°C

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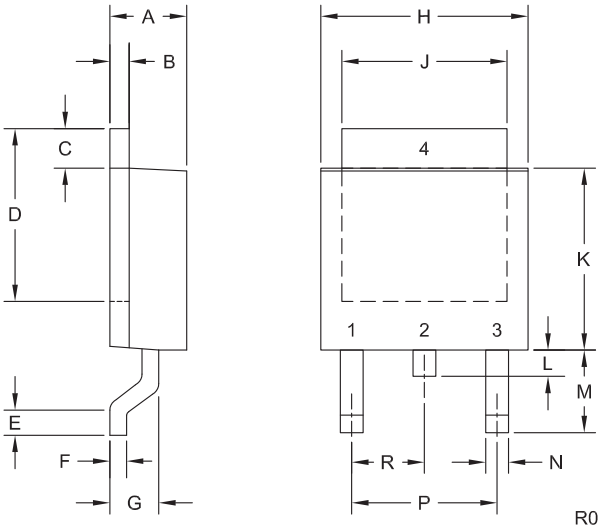
MEDIUM POWER MOSFET
4.0 AMP, 650 VOLT

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=4.0A (Note 2)	11.4	nC
Q_{gs}	V_{DS}=520V, V_{GS}=10V, I_D=4.0A (Note 2)	3.0	nC
Q_{gd}	V_{DS}=520V, V_{GS}=10V, I_D=4.0A (Note 2)	4.7	nC
t_d	V_{DD}=325V, I_D=4.0A, R_G=25Ω (Note 2)	9.0	ns
t_r	V_{DD}=325V, I_D=4.0A, R_G=25Ω (Note 2)	23	ns
t_s	V_{DD}=325V, I_D=4.0A, R_G=25Ω (Note 2)	23	ns
t_f	V_{DD}=325V, I_D=4.0A, R_G=25Ω (Note 2)	21	ns
t_{rr}	V_{GS}=0, I_S=4.0A, di/dt=100A/μs (Note 2)	266	ns
Q_{rr}	V_{GS}=0, I_S=4.0A, di/dt=100A/μs (Note 2)	2.24	μC

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

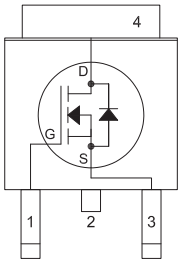
DPAK CASE - MECHANICAL OUTLINE



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)

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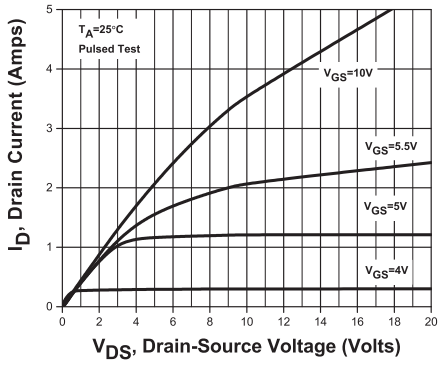
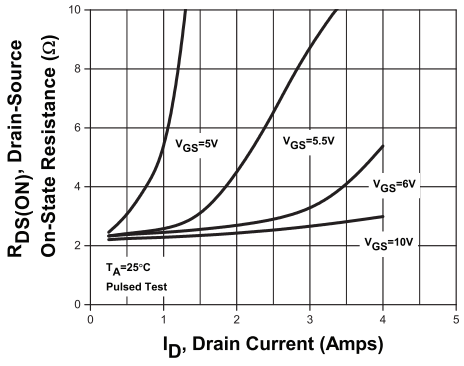
TYPICAL ELECTRICAL CHARACTERISTICS

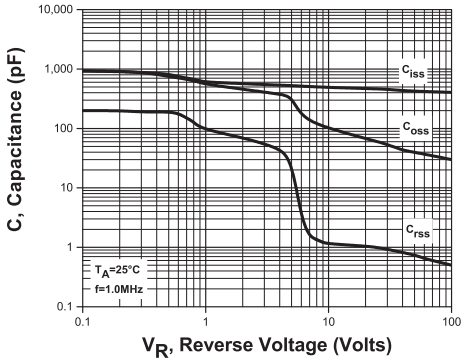
Output Characteristics



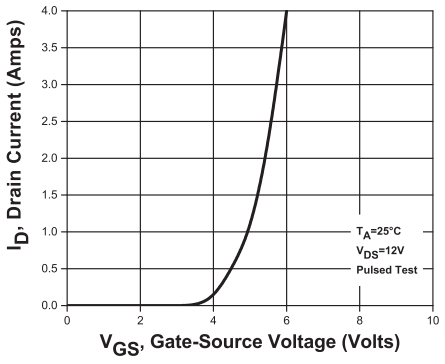
Drain Source On Resistance



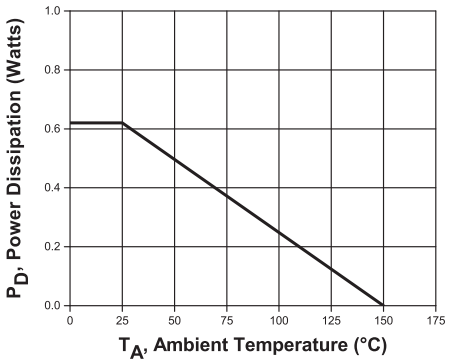
Capacitance



Transfer Characteristics



Power Derating



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