CDM22010-650

SILICON
N-CHANNEL POWER MOSFET
10 AMP, 650 VOLT

TO-220 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDM22010-650 is a high current, 650 Volt N-Channel power 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.

MARKING CODE: CDM10-650

APPLICATIONS:

- Power Factor Correction
- Motor drives
- Alternative energy inverters
- Solid state lighting

FEATURES:

- High voltage capability (V_{DS}=650V)
- Low gate charge (Q_{gs}=8.0nC)
- Low $r_{DS(ON)}$ (0.88Ω)

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	10	A
Maximum Pulsed Drain Current, tp=10μs	I_{DM}	40	A
Continuous Source Current (Body Diode)	I_S	10	A
Maximum Pulsed Source Current (Body Diode)	I_{SM}	40	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	608	mJ
Power Dissipation	P_D	2.0	W
Power Dissipation (T_C=25°C)	P_D	156	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	°C
Thermal Resistance	Θ_{JC}	0.8	°C/W
Thermal Resistance	Θ_{JA}	62.5	°C/W

Note 1: L=30mH, I_{AS}=6.2A, V_{DD}=50V, R_G=25Ω, Initial T_J=25°C

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	2.8	4.0	V
V_{SD}	V_{GS}=0, I_S=10A		0.9	1.4	V
$r_{DS(ON)}$	V_{GS}=10V, I_D=5.0A		0.88	1.0	Ω
C_{rss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		1.2		pF
C_{iss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		1168		pF
C_{oss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		129		pF

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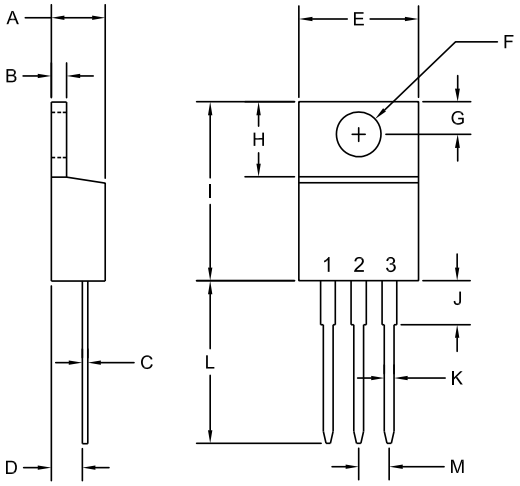
ELECTRICAL CHARACTERISTICS - Continued: (T_A=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(tot)}$	V_{DS}=520V, V_{GS}=10V, I_D=10A (Note 2)	20	nC
Q_{gs}	V_{DS}=520V, V_{GS}=10V, I_D=10A (Note 2)	8.0	nC
Q_{gd}	V_{DS}=520V, V_{GS}=10V, I_D=10A (Note 2)	7.0	nC
t_d	V_{DD}=325V, I_D=10A, R_G=25Ω (Note 2)	20	ns
t_r	V_{DD}=325V, I_D=10A, R_G=25Ω (Note 2)	33	ns
t_s	V_{DD}=325V, I_D=10A, R_G=25Ω (Note 2)	57	ns
t_f	V_{DD}=325V, I_D=10A, R_G=25Ω (Note 2)	36	ns
t_{rr}	V_{GS}=0, I_S=10A, di/dt=100A/μs (Note 2)	570	ns
Q_{rr}	V_{GS}=0, I_S=10A, di/dt=100A/μs (Note 2)	4.7	μC

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

TO-220 CASE - MECHANICAL OUTLINE

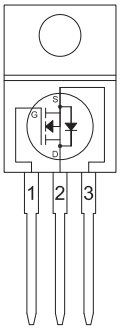


R2

DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.170	0.190	4.31	4.82
B	0.045	0.055	1.15	1.39
C	0.013	0.026	0.33	0.65
D	0.083	0.107	2.10	2.72
E	0.394	0.417	10.01	10.60
F (DIA)	0.140	0.157	3.55	4.00
G	0.100	0.118	2.54	3.00
H	0.230	0.270	5.85	6.85
I	0.560	0.625	14.23	15.87
J	-	0.250	-	6.35
K	0.025	0.038	0.64	0.96
L	0.500	0.579	12.70	14.70
M	0.090	0.110	2.29	2.79

TO-220 (REV: R2)

PIN CONFIGURATION



LEAD CODE:
1) Gate
2) Drain
3) Source
Tab) Drain

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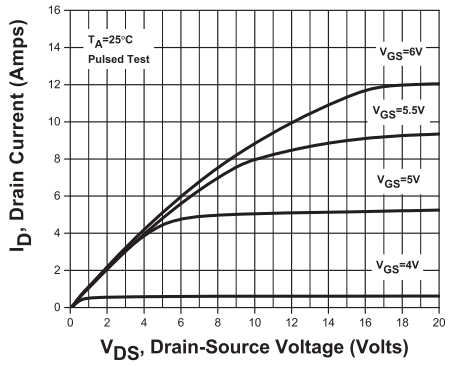
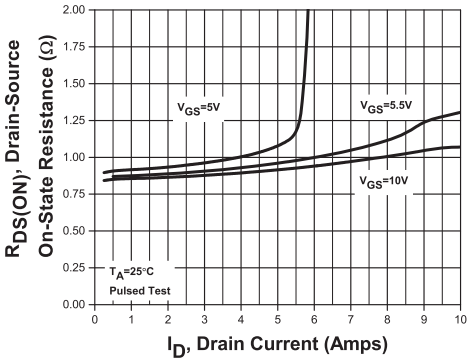
TYPICAL ELECTRICAL CHARACTERISTICS

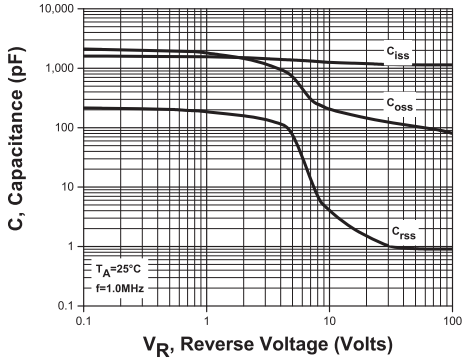
Output Characteristics



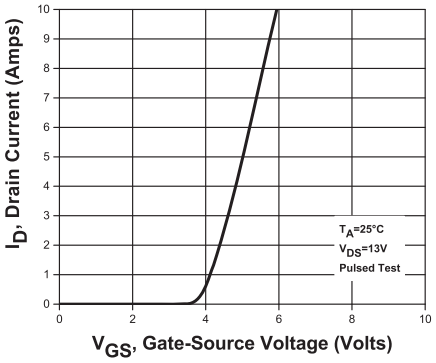
Drain Source On Resistance



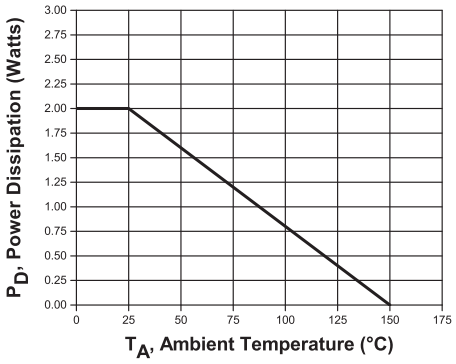
Capacitance



Transfer Characteristics



Power Derating



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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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