

CDM22012-800LRFP

N-CHANNEL  
LR POWER MOSFET  
12 AMP, 800 VOLT



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**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CDM22012-800LRFP is an 800 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 ultra low  $r_{DS(ON)}$ , low threshold voltage, and low gate charge for optimal efficiency.

**MARKING CODE: CDM12-800LR**



TO-220FP CASE

**APPLICATIONS:**

- Power Factor Correction
- Alternative energy inverters
- Solid State Lighting (SSL)

**FEATURES:**

- High voltage capability ( $V_{DS}=800V$ )
- Low gate charge ( $Q_{gs}=7.6nC$  TYP)
- Ultra low  $r_{DS(ON)}$  ( $0.37\Omega$  TYP)

**MAXIMUM RATINGS:** ( $T_C=25^\circ C$  unless otherwise noted)

	SYMBOL		UNITS
Drain-Source Voltage	$V_{DS}$	800	V
Gate-Source Voltage	$V_{GS}$	30	V
Continuous Drain Current (Steady State)	$I_D$	12	A
Continuous Drain Current ( $T_C=100^\circ C$ Steady State)	$I_D$	7.7	A
Maximum Pulsed Drain Current, $t_p=10\mu s$	$I_{DM}$	48	A
Continuous Source Current (Body Diode)	$I_S$	12	A
Maximum Pulsed Source Current (Body Diode)	$I_{SM}$	48	A
Single Pulse Avalanche Energy (Note 1)	$E_{AS}$	702	mJ
Power Dissipation	$P_D$	40	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ C$
Thermal Resistance	$\theta_{JC}$	3.13	$^\circ C/W$
Thermal Resistance	$\theta_{JA}$	62.5	$^\circ C/W$

Note 1:  $L=79mH, I_{AS}=4.0A, V_{DD}=100V, R_G=25\Omega, Initial T_J=25^\circ C$

**ELECTRICAL CHARACTERISTICS:** ( $T_C=25^\circ C$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{GSSF}, I_{GSSR}$	$V_{GS}=30V, V_{DS}=0$			100	nA
$I_{DSS}$	$V_{DS}=800V, V_{GS}=0$			1.0	$\mu A$
$BV_{DSS}$	$V_{GS}=0, I_D=250\mu A$	800			V
$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0		4.0	V
$V_{SD}$	$V_{GS}=0, I_S=12A$			1.4	V
$r_{DS(ON)}$	$V_{GS}=10V, I_D=6.0A$		0.37	0.45	$\Omega$
$C_{rss}$	$V_{DS}=100V, V_{GS}=0, f=1.0MHz$		9.5		pF
$C_{iss}$	$V_{DS}=100V, V_{GS}=0, f=1.0MHz$		1,090		pF
$C_{oss}$	$V_{DS}=100V, V_{GS}=0, f=1.0MHz$		55.2		pF

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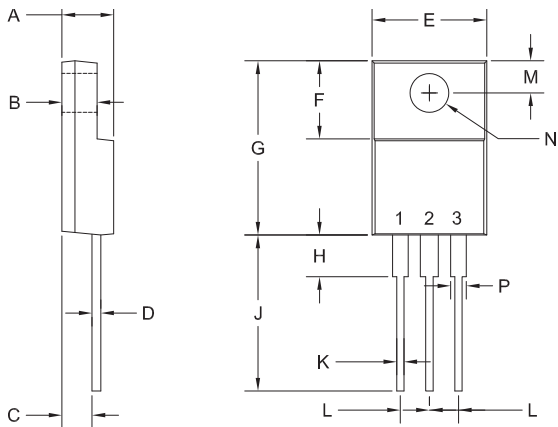


**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(\text{tot})}$	$V_{DD}=640\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ (Note 2)	52.4	nC
$Q_{gs}$	$V_{DD}=640\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ (Note 2)	7.6	nC
$Q_{gd}$	$V_{DD}=640\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ (Note 2)	31.4	nC
$t_{d(\text{on})}$	$V_{DD}=400\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ , $R_G=24\Omega$ (Note 2)	21.1	ns
$t_r$	$V_{DD}=400\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ , $R_G=24\Omega$ (Note 2)	44.8	ns
$t_{d(\text{off})}$	$V_{DD}=400\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ , $R_G=24\Omega$ (Note 2)	171.2	ns
$t_f$	$V_{DD}=400\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=12\text{A}$ , $R_G=24\Omega$ (Note 2)	42.5	ns
$t_{rr}$	$V_{GS}=0$ , $I_S=12\text{A}$ , $di/dt=100\text{A}/\mu\text{s}$ (Note 2)	430	ns
$Q_{rr}$	$V_{GS}=0$ , $I_S=12\text{A}$ , $di/dt=100\text{A}/\mu\text{s}$ (Note 2)	6.5	$\mu\text{C}$

Note 2: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

**TO-220FP CASE - MECHANICAL OUTLINE**

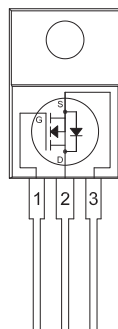


SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.165	0.202	4.20	5.12
B	0.090	0.130	2.30	3.30
C	0.098	0.122	2.50	3.10
D	-	0.031	-	0.80
E	0.382	0.418	9.70	10.63
F	0.238	0.276	6.06	7.00
G	0.583	0.640	14.80	16.25
H	-	0.161	-	4.10
J	0.506	0.543	12.85	13.80
K	0.020	0.031	0.50	0.79
L	0.100		2.54	
M	0.120	0.140	3.05	3.55
N (DIA)	0.116	0.134	2.95	3.40
P	0.039	0.058	1.00	1.47

TO-220FP (REV: R4)

R4

**PIN CONFIGURATION**



**LEAD CODE:**

- 1) Gate
- 2) Drain
- 3) Source

**MARKING CODE: CDM12-800LR**

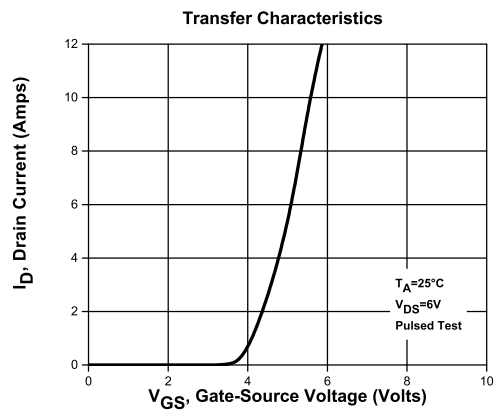
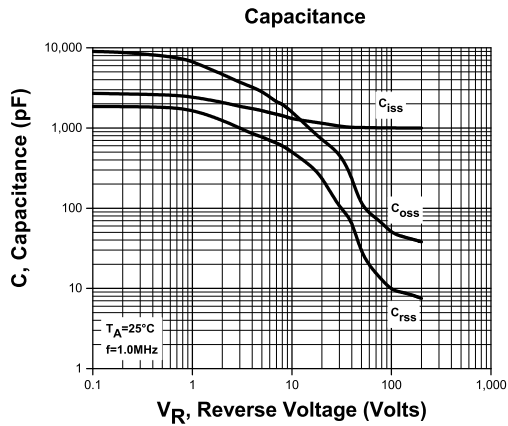
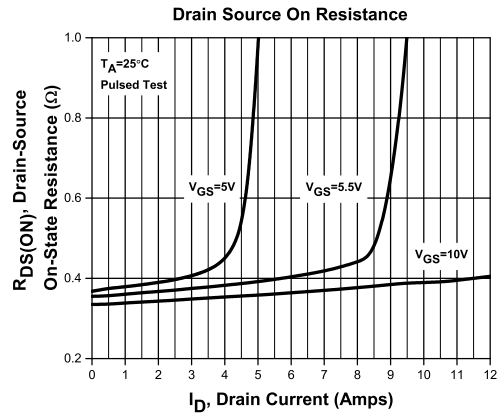
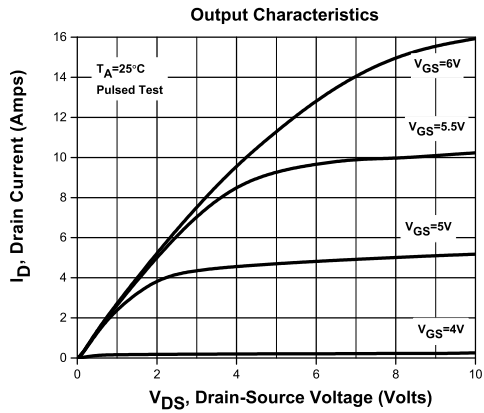
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### TYPICAL ELECTRICAL CHARACTERISTICS



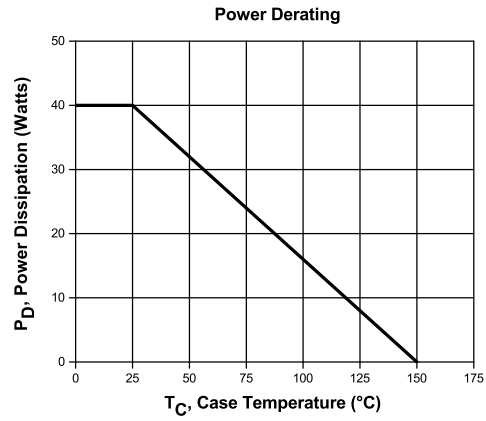
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### TYPICAL ELECTRICAL CHARACTERISTICS



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## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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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

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> 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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### 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).

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.  
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Main Fax: (631) 435-1824  
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[www.centrasemi.com](http://www.centrasemi.com)

**Worldwide Field Representatives:**  
[www.centrasemi.com/wwreps](http://www.centrasemi.com/wwreps)

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

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For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: [www.centrasemi.com/terms](http://www.centrasemi.com/terms)



<http://www.centrasemi.com>

## Product End of Life Notification

<b>PDN ID:</b>	PDN01165
<b>Notification Date:</b>	2/04/21
<b>Last Buy Date:</b>	Stock Only
<b>Last Shipment Date</b>	Stock Only

Please be advised that Central Semiconductor must immediately discontinue the product(s) listed in the attached PDN notice. We are unable to accept any further orders for these products **unless** we have available inventory on hand.

You may have purchased one or more of the products listed. Please do not hesitate to contact your local Central Semiconductor sales representative with any questions or needs you may have. Central regrets any inconvenience this may cause.

Sincerely,

Central Semiconductor Corp.

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DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor Corp. will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.



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# Product End of Life Notification

<b>PDN ID:</b>	PDN01165
<b>Notification Date:</b>	2/04/21
<b>Last Buy Date:</b>	Stock Only
<b>Last Shipment Date</b>	Stock Only

Summary: The following MOSFETs in the TO-220 and TO-220FP packages are being discontinued are now classified as End of Life (EOL).

Although Central Semiconductor Corp. makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Management Process. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

**\* All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.**

<b>Central Part Number</b>	<b>Replacement</b>
CDM22012-800LRFP	N/A, Stock Only
CDM22012-800LRFP SL	N/A, Stock Only
CDM2206-800LR	N/A, Stock Only
CDM2206-800LR SL	N/A, Stock Only
CDM2208-800FP	N/A, Stock Only
CDM2208-800FP SL	N/A, Stock Only

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. Please email your requests to [engineering@centrasemi.com](mailto:engineering@centrasemi.com).

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