

CDM2205-800FP

SILICON
N-CHANNEL POWER MOSFET
5.0 AMP, 800 VOLT



TO-220FP CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDM2205-800FP 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 low $r_{DS(ON)}$, low threshold voltage, and low gate charge for optimal efficiency.

MARKING CODE: CDM05-800FP

APPLICATIONS:

- Power Factor Correction
- Alternative energy inverters
- Solid State Lighting

FEATURES:

- High voltage capability ($V_{DS}=800V$)
- Low gate charge ($Q_{g(tot)}=17.4nC$ TYP)
- Low $r_{DS(ON)}$ (2.2Ω 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	5.0	A
Maximum Pulsed Drain Current, $t_p=10\mu s$	I_{DM}	20	A
Continuous Source Current (Body Diode)	I_S	5.0	A
Maximum Pulsed Source Current (Body Diode)	I_{SM}	20	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	323	mJ
Power Dissipation	P_D	48	W
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	$^\circ C$
Thermal Resistance	θ_{JC}	2.6	$^\circ C/W$
Thermal Resistance	θ_{JA}	120	$^\circ C/W$

Note 1: $L=30mH, I_{AS}=4.5A, V_{DD}=60V, R_G=25\Omega, \text{Initial } T_J=25^\circ C$

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	μA
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	3.0	4.0	V
V_{SD}	$V_{GS}=0, I_S=5.0A$		0.9	1.4	V
$r_{DS(ON)}$	$V_{GS}=10V, I_D=2.5A$		2.2	2.7	Ω
C_{rss}	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$		2.8		pF
C_{iss}	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$		705		pF
C_{oss}	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$		72		pF

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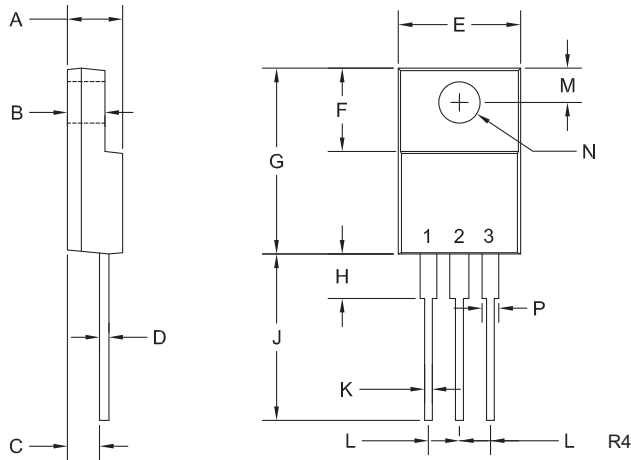


ELECTRICAL CHARACTERISTICS - Continued: ($T_C=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(\text{tot})}$	$V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=5.0\text{A}$ (Note 2)	17.4	nC
Q_{gs}	$V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=5.0\text{A}$ (Note 2)	3.70	nC
Q_{gd}	$V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=5.0\text{A}$ (Note 2)	7.88	nC
$t_{d(\text{on})}$	$V_{DD}=400\text{V}, I_D=5.0\text{A}, R_G=25\Omega$ (Note 2)	13	ns
t_r	$V_{DD}=400\text{V}, I_D=5.0\text{A}, R_G=25\Omega$ (Note 2)	27	ns
$t_{d(\text{off})}$	$V_{DD}=400\text{V}, I_D=5.0\text{A}, R_G=25\Omega$ (Note 2)	44	ns
t_f	$V_{DD}=400\text{V}, I_D=5.0\text{A}, R_G=25\Omega$ (Note 2)	30	ns
t_{rr}	$V_{GS}=0, I_S=5.0\text{A}, di/dt=100\text{A}/\mu\text{s}$ (Note 2)	549	ns
Q_{rr}	$V_{GS}=0, I_S=5.0\text{A}, di/dt=100\text{A}/\mu\text{s}$ (Note 2)	2.95	μC

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

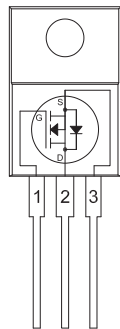
TO-220FP CASE - MECHANICAL OUTLINE



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)

PIN CONFIGURATION



LEAD CODE:

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

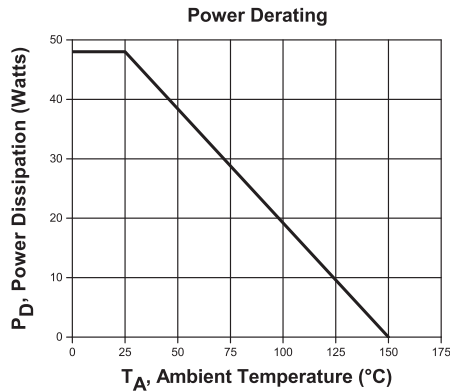
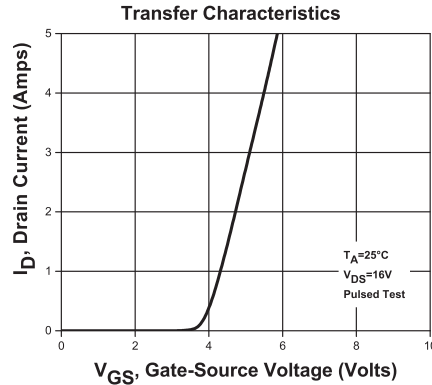
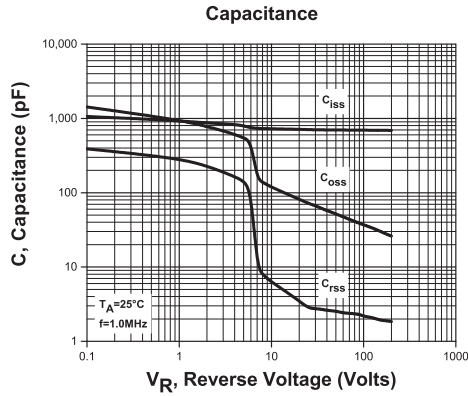
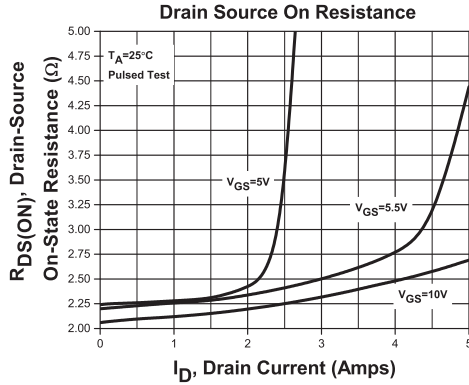
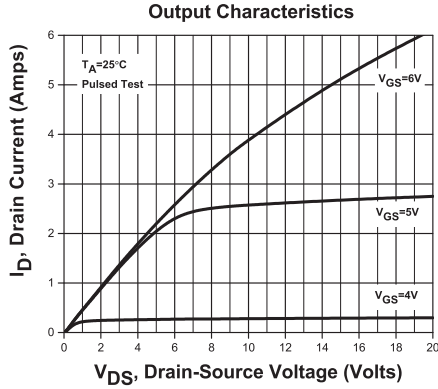
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TYPICAL ELECTRICAL CHARACTERISTICS



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