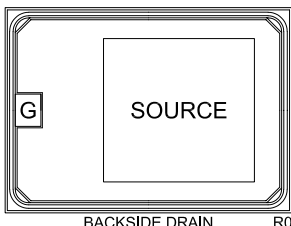


CP399-DM11-225

N-Channel MOSFET Die

Enhancement-Mode

The CP399-DM11-225L is an N-Channel MOSFET die designed for fast switching, low earth orbit applications. This MOSFET combines high voltage with low gate charge for optimal efficiency.



MECHANICAL SPECIFICATIONS:

Die Size	149.6 x 107.1 MILS
Die Thickness	9.06 MILS
Gate Bonding Pad Size	13.4 x 16.9 MILS
Source Bonding Pad Size	78.7 x 74.8 MILS
Top Side Metalization	Al – 43,000Å
Back Side Metalization	Ag – 8,000Å
Scribe Alley Width	2.36 MILS
Wafer Diameter	8 INCHES
Gross Die Per Wafer	2,638

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

	SYMBOL		UNITS
Drain-Source Voltage	V_{DS}	225	V
Gate-Source Voltage	V_{GS}	30	V
Continuous Drain Current (Steady State)	I_D	11	A
Maximum Pulsed Drain Current, $t_p=10\mu\text{s}$	I_{DM}	44	A
Continuous Source Current (Body Diode)	I_S	11	A
Maximum Pulsed Source Current (Body Diode)	I_{SM}	44	A
Single Pulse Avalanche Energy (Note 1)	E_{AS}	280	mJ
Operating and Storage Junction Temperature	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

Note 1: $L=30\text{mH}$, $I_{AS}=4.0\text{A}$, $V_{DD}=100\text{V}$, $R_G=25\Omega$, Initial $T_J=25^{\circ}\text{C}$

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}, I_{GSSR}	$V_{GS}=30\text{V}, V_{DS}=0$			100	nA
I_{DSS}	$V_{DS}=600\text{V}, V_{GS}=0$		0.047	1.0	μA
BV_{DSS}	$V_{GS}=0, I_D=250\mu\text{A}$	600			V
$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu\text{A}$	2.0	3.09	4.0	V
V_{SD}	$V_{GS}=0, I_S=11\text{A}$		0.92	1.4	V
$r_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=5.5\text{A}$		0.30	0.36	Ω
C_{rss}	$V_{DS}=100\text{V}, V_{GS}=0, f=1.0\text{MHz}$		2.76		pF
C_{iss}	$V_{DS}=100\text{V}, V_{GS}=0, f=1.0\text{MHz}$		763		pF
C_{oss}	$V_{DS}=100\text{V}, V_{GS}=0, f=1.0\text{MHz}$		52		pF

CP399-DM11-225

N-Channel MOSFET Die

Enhancement-Mode



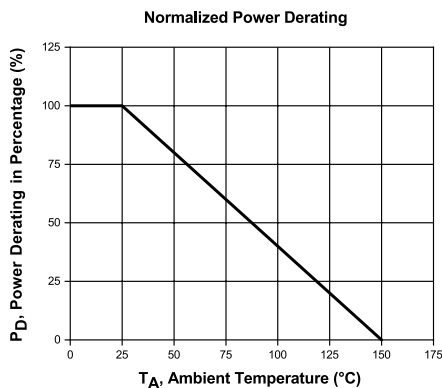
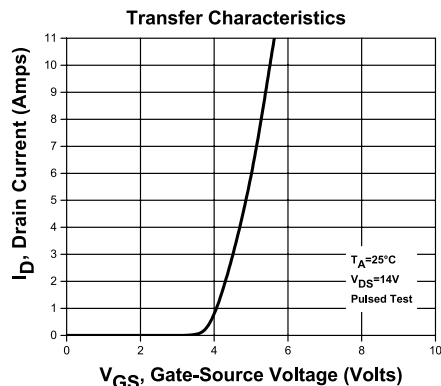
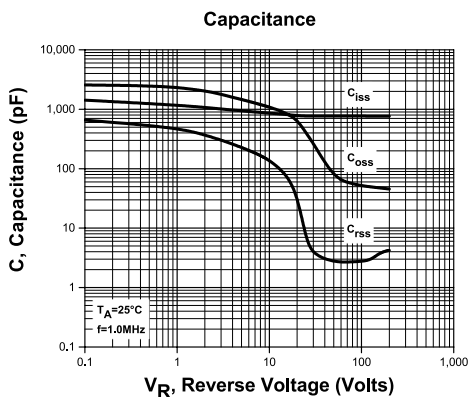
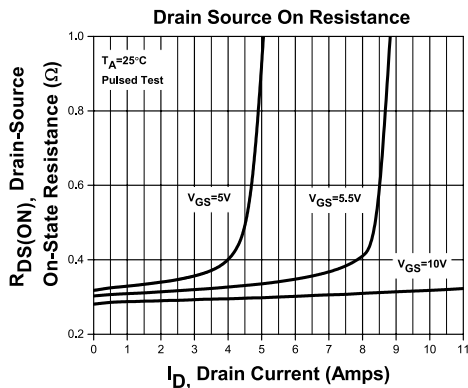
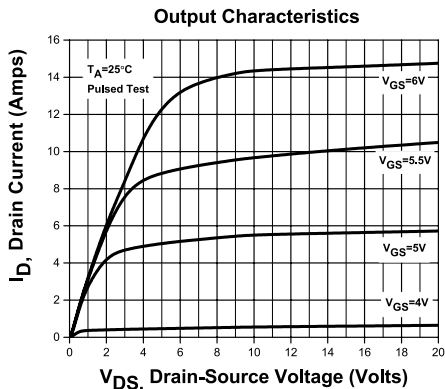
ELECTRICAL CHARACTERISTICS PRE-TOTAL DOSE IRRADIATION: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(\text{tot})}$	$V_{DS}=480\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$ (Note 2)	23.05	nC
Q_{gs}	$V_{DS}=480\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$ (Note 2)	4.45	nC
Q_{gd}	$V_{DS}=480\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$ (Note 2)	11.31	nC
$t_{d(\text{on})}$	$V_{DD}=300\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$, $R_G=25\Omega$ (Note 2)	11	ns
t_r	$V_{DD}=300\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$, $R_G=25\Omega$ (Note 2)	27	ns
$t_{d(\text{off})}$	$V_{DD}=300\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$, $R_G=25\Omega$ (Note 2)	37	ns
t_f	$V_{DD}=300\text{V}$, $V_{GS}=10\text{V}$, $I_D=11\text{A}$, $R_G=25\Omega$ (Note 2)	23	ns
t_{rr}	$V_{GS}=0$, $I_S=11\text{A}$, $di/dt=100\text{A}/\mu\text{s}$ (Note 2)	315	ns
Q_{rr}	$V_{GS}=0$, $I_S=11\text{A}$, $di/dt=100\text{A}/\mu\text{s}$ (Note 2)	4.0	μC

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

CP399-DM11-225

Typical Electrical Characteristics



CP399-DM11-225

Radiation Characteristics

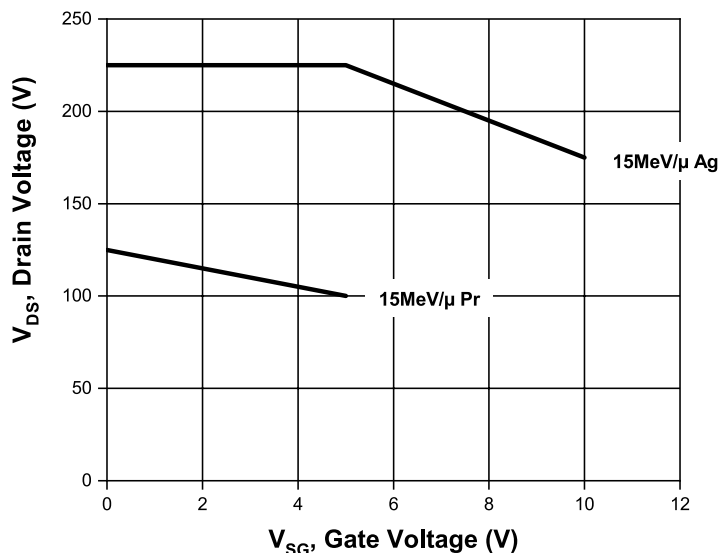
DOSE	TEST CONDITIONS
10 kRad(Si)	$V_{GS}=15V$, $V_{DS}=0$

ELECTRICAL CHARACTERISTICS POST-TOTAL DOSE IRRADIATION: ($T_A=25^\circ C$)

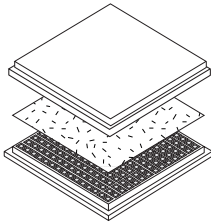
SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF} , I_{GSSR}	$V_{GS}=30V$, $V_{DS}=0$			100	nA
I_{DSS}	$V_{DS}=600V$, $V_{GS}=0$			200	μA
BV_{DSS}	$V_{GS}=0$, $I_D=250\mu A$	600			V
$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	0.4		1.6	V
V_{SD}	$V_{GS}=0$, $I_S=11A$			1.4	V
$r_{DS(ON)}$	$V_{GS}=10V$, $I_D=5.5A$			0.36	Ω

SINGLE EVENT EFFECT SAFE OPERATING AREA:

ION	RANGE	LET
Ag	111.2 μm	44.9MeV-cm ² /mg
Pr	117.0 μm	61.3MeV-cm ² /mg



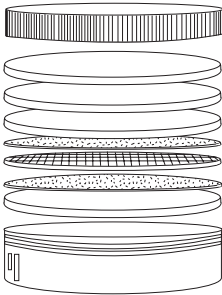
BARE DIE PACKING OPTIONS



BARE DIE IN TRAY (WAFFLE) PACK

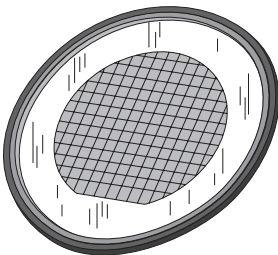
CT: Singulated die in tray (waffle) pack.
(example: CP211-PART NUMBER-CT)

CM: Singulated die in tray (waffle) pack 100% visually inspected as per MIL-STD-750, (method 2072 transistors, method 2073 diodes).
(example: CP211-PART NUMBER-CM)



UNSAWN WAFER

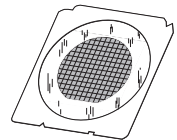
WN: Full wafer, unsawn, 100% tested with reject die inked.
(example: CP211-PART NUMBER-WN)



SAWN WAFER ON PLASTIC RING

WR: Full wafer, sawn and mounted on plastic ring,
100% tested with reject die inked.
(example: CP211-PART NUMBER-WR)

Please note: Sawn Wafer on Metal Frame (WS) is possible as a special order. Please contact your Central Sales Representative at 631-435-1110.



Visit the Central website for a complete listing of specifications:
www.centrasemi.com/bdspecs

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).

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