

CMLDM8120TG
SURFACE MOUNT
P-CHANNEL
ENHANCEMENT-MODE
SILICON MOSFET

PICOmini™



SOT-563 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLDM8120TG is an Enhancement-mode P-Channel Field Effect Transistor, manufactured by the P-Channel DMOS Process, designed for high speed pulsed amplifier and driver applications. This MOSFET offers Low $r_{DS(ON)}$ and a MAX Threshold Voltage of 0.85V.

MARKING CODE: CT8

FEATURES:

- Device is **Halogen Free** by design
- Low $r_{DS(ON)}$
- MAX Threshold Voltage (0.85V)
- Logic level compatibility

APPLICATIONS:

- Load/Power switches
- Power supply converter circuits
- Battery powered portable equipment

MAXIMUM RATINGS: ($T_A=25^\circ\text{C}$)

Drain-Source Voltage
Gate-Source Voltage
Continuous Drain Current (Steady State)
Continuous Drain Current, $t \leq 5.0\text{s}$
Continuous Source Current (Body Diode)
Maximum Pulsed Drain Current, $t_p=10\mu\text{s}$
Maximum Pulsed Source Current, $t_p=10\mu\text{s}$
Power Dissipation (Note 1)
Power Dissipation (Note 2)
Power Dissipation (Note 3)
Operating and Storage Junction Temperature
Thermal Resistance

SYMBOL

V_{DS}	20
V_{GS}	8.0
I_D	860
I_D	950
I_S	360
I_{DM}	4.0
I_{SM}	4.0
P_D	350
P_D	300
P_D	150
T_J, T_{stg}	-65 to +150
Θ_{JA}	357

UNITS

V
V
mA
mA
mA
A
A
mW
mW
mW
°C
°C/W

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}, I_{GSSR}	$V_{GS}=8.0\text{V}, V_{DS}=0$		1.0	50	nA
I_{DSS}	$V_{DS}=20\text{V}, V_{GS}=0$		5.0	500	nA
BV_{DSS}	$V_{GS}=0, I_D=250\mu\text{A}$	20	24		V
$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.45		0.85	V
V_{SD}	$V_{GS}=0, I_S=360\text{mA}$			0.9	V
$r_{DS(ON)}$	$V_{GS}=4.5\text{V}, I_D=0.95\text{A}$		0.085	0.15	Ω
$r_{DS(ON)}$	$V_{GS}=4.5\text{V}, I_D=0.77\text{A}$		0.085	0.142	Ω
$r_{DS(ON)}$	$V_{GS}=2.5\text{V}, I_D=0.67\text{A}$		0.13	0.20	Ω
$r_{DS(ON)}$	$V_{GS}=1.8\text{V}, I_D=0.20\text{A}$		0.19	0.24	Ω
$r_{DS(ON)}$	$V_{GS}=1.2\text{V}, I_D=0.10\text{A}$		0.60		Ω

Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0mm^2
(2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm^2
(3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm^2

R2 (2-August 2011)

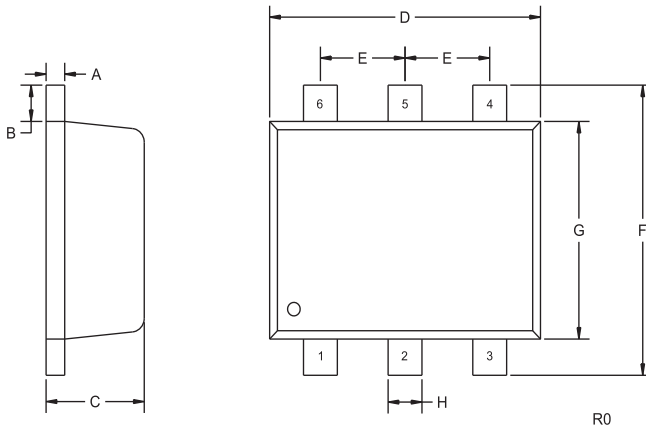
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$Q_{g(\text{tot})}$	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=1.0\text{A}$		3.56		nC
Q_{gs}	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=1.0\text{A}$		0.36		nC
Q_{gd}	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=1.0\text{A}$		1.52		nC
g_{FS}	$V_{DS}=10\text{V}$, $I_D=0.81\text{A}$	2.0			S
C_{rss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		80		pF
C_{iss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		200		pF
C_{oss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		60		pF
t_{on}	$V_{DD}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=0.95\text{A}$, $R_G=6\Omega$		20		ns
t_{off}	$V_{DD}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=0.95\text{A}$, $R_G=6\Omega$		25		ns

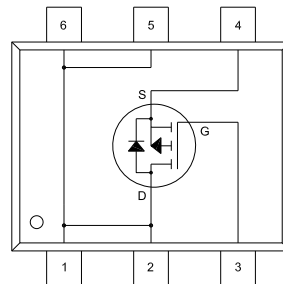
SOT-563 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.007	0.10	0.18
B	0.008		0.20	
C	0.022	0.024	0.56	0.60
D	0.059	0.067	1.50	1.70
E	0.020		0.50	
F	0.061	0.067	1.55	1.70
G	0.047		1.20	
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R0)

PIN CONFIGURATION



LEAD CODE:

- 1) Drain
- 2) Drain
- 3) Gate
- 4) Source
- 5) Drain
- 6) Drain

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R2 (2-August 2011)