

**CMLDM8120TG**  
**SURFACE MOUNT**  
**P-CHANNEL**  
**ENHANCEMENT-MODE**  
**SILICON MOSFET**



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**PICOmini™**



**SOT-563 CASE**

**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, $t \leq 5.0s$
Continuous Source Current (Body Diode)
Maximum Pulsed Drain Current, $t_p=10\mu s$
Maximum Pulsed Source Current, $t_p=10\mu s$
Power Dissipation (Note 1)
Power Dissipation (Note 2)
Power Dissipation (Note 3)
Operating and Storage Junction Temperature
Thermal Resistance

**SYMBOL**

SYMBOL		UNITS
$V_{DS}$	20	V
$V_{GS}$	8.0	V
$I_D$	860	mA
$I_D$	950	mA
$I_S$	360	mA
$I_{DM}$	4.0	A
$I_{SM}$	4.0	A
$P_D$	350	mW
$P_D$	300	mW
$P_D$	150	mW
$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$
$\theta_{JA}$	357	$^\circ\text{C/W}$

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

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

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

R2 (2-August 2011)

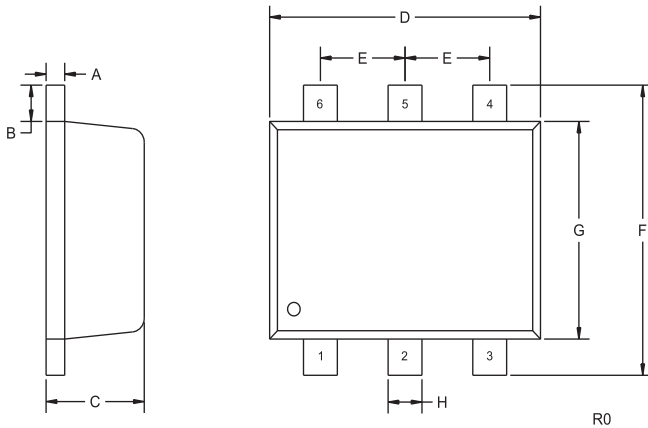
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

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

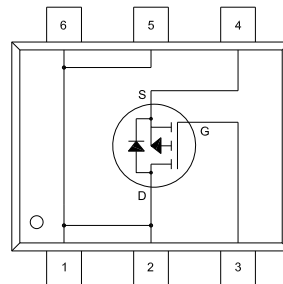
**SOT-563 CASE - MECHANICAL OUTLINE**



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)