

CMLM7387
MULTI DISCRETE MODULE™
SURFACE MOUNT
N-CHANNEL MOSFET AND
LOW NOISE PNP TRANSISTOR



www.centrasemi.com



DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM7387 is a Multi Discrete Module™ consisting of a single N-Channel Enhancement-mode MOSFET and a Low Noise PNP transistor packaged in a space saving PICOmini™ SOT-563 surface mount case. This device is designed for small signal general purpose applications where size and operational efficiency are prime requirements.

MARKING CODE: 7C7

FEATURES:

- ESD protection up to 2kV
- Low $r_{DS(on)}$ MOSFET
- Low $V_{CE(SAT)}$ PNP Transistor

• Devices are **Halogen Free** by design

APPLICATIONS:

- DC / DC Converters
- Battery Powered Portable Equipment

MAXIMUM RATINGS (SOT-563 Package): ($T_A=25^\circ\text{C}$)

Power Dissipation (Note 1)	P_D	350	mW
Power Dissipation (Note 2)	P_D	300	mW
Power Dissipation (Note 3)	P_D	150	mW
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
Thermal Resistance	θ_{JA}	357	$^\circ\text{C/W}$

SYMBOL		UNITS
P_D	350	mW
P_D	300	mW
P_D	150	mW
T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
θ_{JA}	357	$^\circ\text{C/W}$

MAXIMUM RATINGS Q1: ($T_A=25^\circ\text{C}$)

Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	12	V
Continuous Drain Current	I_D	160	mA
Maximum Pulsed Drain Current	I_{DM}	560	mA

SYMBOL		UNITS
V_{DS}	50	V
V_{GS}	12	V
I_D	160	mA
I_{DM}	560	mA

MAXIMUM RATINGS Q2: ($T_A=25^\circ\text{C}$)

Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	100	mA

SYMBOL		UNITS
V_{CBO}	50	V
V_{CEO}	45	V
V_{EBO}	5.0	V
I_C	100	mA

ELECTRICAL CHARACTERISTICS Q1: ($T_A=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{GSSF}, I_{GSSR}	$V_{GS}=8.0V, V_{DS}=0V$			1.0	μA
I_{GSSF}, I_{GSSR}	$V_{GS}=12V, V_{DS}=0V$			5.0	μA
I_{DSS}	$V_{DS}=50V, V_{GS}=0V$			10	μA
BV_{DSS}	$V_{GS}=0V, I_D=250\mu\text{A}$	50			V
$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.7		1.0	V
$r_{DS(ON)}$	$V_{GS}=4.0V, I_D=100\text{mA}$			4.0	Ω
$r_{DS(ON)}$	$V_{GS}=2.5V, I_D=80\text{mA}$			5.0	Ω
g_{FS}	$V_{DS}=10V, I_D=100\text{mA}$	180			mS

- Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0 mm²
(2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0 mm²
(3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4 mm²

R0 (1-December 2009)

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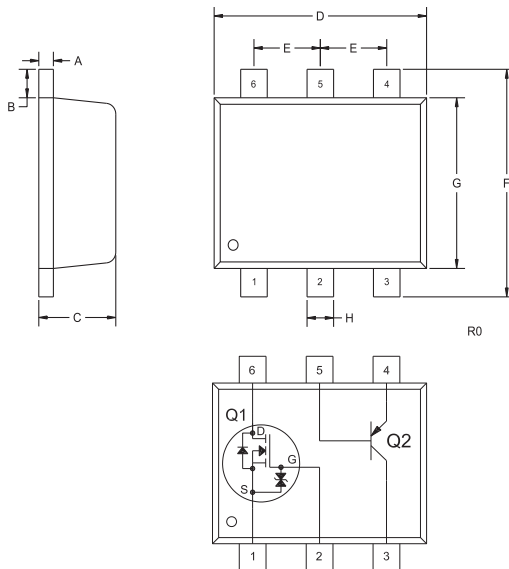
ELECTRICAL CHARACTERISTICS Q1 - Continued:

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
C_{rss}	$V_{DS}=10V, V_{GS}=0, f=1.0MHz$		2.1		pF
C_{iss}	$V_{DS}=10V, V_{GS}=0, f=1.0MHz$		25		pF
C_{oss}	$V_{DS}=10V, V_{GS}=0, f=1.0MHz$		5.0		pF

ELECTRICAL CHARACTERISTICS Q2: ($T_A=25^\circ C$)

I_{CBO}	$V_{CB}= 30V$			15	nA
BV_{CBO}	$I_C= 10\mu A$	50			V
BV_{CEO}	$I_C= 10mA$	45			V
BV_{EBO}	$I_E= 1.0\mu A$	5.0			V
$V_{CE(SAT)}$	$I_C= 10mA, I_B= 0.5mA$			100	mV
$V_{CE(SAT)}$	$I_C= 100mA, I_B= 5.0mA$			400	mV
$V_{BE(SAT)}$	$I_C= 10mA, I_B= 0.5mA$		700		mV
$V_{BE(SAT)}$	$I_C= 100mA, I_B= 5.0mA$		900		mV
$V_{BE(on)}$	$V_{CE}= 5.0V, I_C= 2.0mA$	600		750	mV
$V_{BE(on)}$	$V_{CE}= 5.0V, I_C= 10mA$			820	mV
h_{FE}	$V_{CE}= 5.0V, I_C= 2.0mA$	220		475	
f_T	$V_{CE}= 5.0V, I_C=10mA, f=100MHz$	100			MHz
C_{ob}	$V_{CB}= 10V, I_E=0, f=1.0MHz$			4.5	pF
NF	$V_{CE}= 5.0V, I_C=0.2mA, R_S=2k\Omega, f=1.0kHz, BW=200Hz$			10	dB

SOT-563 - 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)

LEAD CODE:

- 1) SOURCE Q1
- 2) GATE Q1
- 3) COLLECTOR Q2
- 4) EMITTER Q2
- 5) BASE Q2
- 6) DRAIN Q1

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