

**CMLM0584  
MULTI DISCRETE MODULE™**

**SURFACE MOUNT SILICON  
P-CHANNEL MOSFET AND  
LOW V<sub>F</sub> SCHOTTKY DIODE**

**PICOmini™**

**MDM™**  
Multi Discrete Module



**SOT-563 CASE**

• Device is **Halogen Free** by design

**APPLICATIONS:**

- DC / DC Converters
- Battery Powered Portable Equipment

**MAXIMUM RATINGS - CASE: (T<sub>A</sub>=25°C)**

Power Dissipation (Note 1)  
Power Dissipation (Note 2)  
Power Dissipation (Note 3)  
Operating and Storage Junction Temperature  
Thermal Resistance

**MAXIMUM RATINGS - Q1: (T<sub>A</sub>=25°C)**

Drain-Source Voltage  
Gate-Source Voltage  
Continuous Drain Current

**MAXIMUM RATINGS - D1: (T<sub>A</sub>=25°C)**

Peak Repetitive Reverse Voltage  
Continuous Forward Current  
Peak Repetitive Forward Current, tp≤1.0ms  
Peak Forward Surge Current, tp=8.0ms

**ELECTRICAL CHARACTERISTICS - Q1: (T<sub>A</sub>=25°C unless otherwise noted)**

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =8.0V, V <sub>DS</sub> =0			3.0	μA
I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0			1.0	μA
BV <sub>DSS</sub>	V <sub>GS</sub> =0, I <sub>D</sub> =100μA	30			V
V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5		1.0	V
V <sub>SD</sub>	V <sub>GS</sub> =0, I <sub>S</sub> =100mA	0.5		1.1	V
r <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =430mA			1.1	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =2.5V, I <sub>D</sub> =200mA			2.0	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =1.8V, I <sub>D</sub> =100mA			3.3	Ω
g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100mA	200			mS

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>

**Central™**  
Semiconductor Corp.

[www.centralemi.com](http://www.centralemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0584 is a Multi Discrete Module™ consisting of a single P-Channel Enhancement-mode MOSFET and a Low V<sub>F</sub> Schottky diode 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: 58C**

**FEATURES:**

- ESD protection up to 2kV
- Low r<sub>DS(on)</sub> Transistor (1.5Ω MAX @ V<sub>GS</sub>=2.5V)
- Low V<sub>F</sub> Schottky Diode (0.47V MAX @ 0.5A)

SYMBOL		UNITS
P <sub>D</sub>	350	mW
P <sub>D</sub>	300	mW
P <sub>D</sub>	150	mW
T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C
θ <sub>JA</sub>	357	°C/W

SYMBOL		UNITS
V <sub>DS</sub>	30	V
V <sub>GS</sub>	8.0	V
I <sub>D</sub>	450	mA

SYMBOL		UNITS
V <sub>R</sub> RM	40	V
I <sub>F</sub>	500	mA
I <sub>F</sub> RM	3.5	A
I <sub>F</sub> SM	10	A

R2 (2-August 2011)

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P-CHANNEL MOSFET AND  
LOW  $V_F$  SCHOTTKY DIODE**

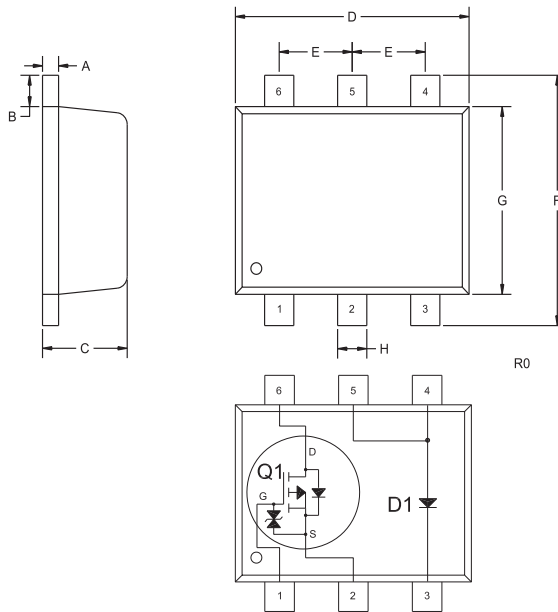
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MAX	UNITS
$Q_{g(\text{tot})}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5$ , $I_D=1.0\text{A}$	0.88	nC
$Q_{gs}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5$ , $I_D=1.0\text{A}$	0.35	nC
$Q_{gd}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5$ , $I_D=1.0\text{A}$	0.128	nC
$C_{rss}$	$V_{DS}=25\text{V}$ , $V_{GS}=0$ , $f=1.0\text{MHz}$	10	pF
$C_{iss}$	$V_{DS}=25\text{V}$ , $V_{GS}=0$ , $f=1.0\text{MHz}$	55	pF
$C_{oss}$	$V_{DS}=25\text{V}$ , $V_{GS}=0$ , $f=1.0\text{MHz}$	15	pF

**ELECTRICAL CHARACTERISTICS - D1:** ( $T_A=25^\circ\text{C}$ )

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_R$	$V_R=10\text{V}$		20	$\mu\text{A}$
$I_R$	$V_R=30\text{V}$		100	$\mu\text{A}$
$BV_R$	$I_R=500\mu\text{A}$	40		V
$V_F$	$I_F=100\mu\text{A}$		0.13	V
$V_F$	$I_F=1.0\text{mA}$		0.21	V
$V_F$	$I_F=10\text{mA}$		0.27	V
$V_F$	$I_F=100\text{mA}$		0.35	V
$V_F$	$I_F=500\text{mA}$		0.47	V
$C_T$	$V_R=1.0\text{V}$ , $f=1.0\text{MHz}$		50	pF

**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)

**LEAD CODE:**

- 1) Gate Q1
- 2) Source Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Drain Q1

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