

**CMLM0574  
MULTI DISCRETE MODULE™**

**SURFACE MOUNT SILICON  
N-CHANNEL MOSFET AND  
LOW  $V_F$  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: ( $T_A=25^\circ\text{C}$ )**

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

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

Drain-Source Voltage  
Gate-Source Voltage  
Continuous Drain Current

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

Peak Repetitive Reverse Voltage  
Continuous Forward Current  
Peak Repetitive Forward Current,  $t_p \leq 1.0\text{ms}$   
Peak Forward Surge Current,  $t_p = 8.0\text{ms}$

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{GSSF}, I_{GSSR}$	$V_{GS}=8.0\text{V}, V_{DS}=0$			3.0	$\mu\text{A}$
$I_{DSS}$	$V_{DS}=30\text{V}, V_{GS}=0$			1.0	$\mu\text{A}$
$BV_{DSS}$	$V_{GS}=0, I_D=10\mu\text{A}$	30			V
$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5		1.0	V
$V_{SD}$	$V_{GS}=0, I_S=400\text{mA}$	0.5		1.1	V
$r_{DS(ON)}$	$V_{GS}=4.5\text{V}, I_D=200\text{mA}$		280	460	$\text{m}\Omega$
$r_{DS(ON)}$	$V_{GS}=2.5\text{V}, I_D=100\text{mA}$		390	560	$\text{m}\Omega$
$r_{DS(ON)}$	$V_{GS}=1.8\text{V}, I_D=75\text{mA}$		550	730	$\text{m}\Omega$
$g_{FS}$	$V_{DS}=10\text{V}, I_D=100\text{mA}$	200			$\text{mS}$

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



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**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0574 is a Multi Discrete Module™ consisting of a single N-Channel Enhancement-mode MOSFET and a Low  $V_F$  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: 57C**

**FEATURES:**

- ESD protection up to 2kV
- Low  $r_{DS(on)}$  Transistor (560m $\Omega$  MAX @  $V_{GS}=2.5\text{V}$ )
- Low  $V_F$  Schottky Diode (0.47V MAX @ 0.5A)

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

SYMBOL		UNITS
$V_{DS}$	30	V
$V_{GS}$	8.0	V
$I_D$	450	mA

SYMBOL		UNITS
$V_{RRM}$	40	V
$I_F$	500	mA
$I_{FRM}$	3.5	A
$I_{FSM}$	10	A

R2 (2-August 2011)

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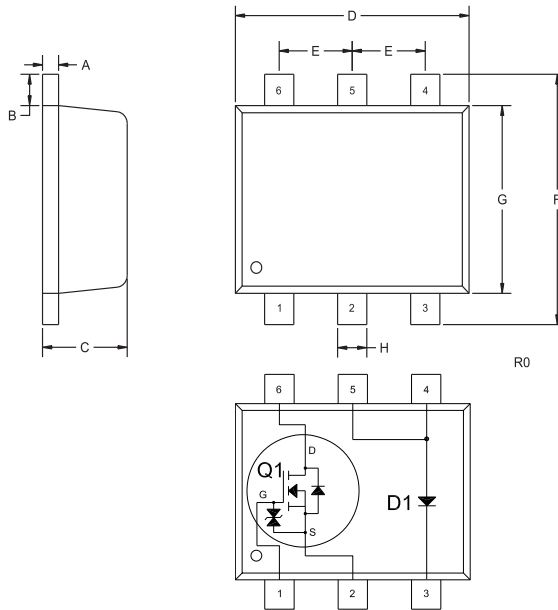
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	TYP	UNITS
$Q_{g(\text{tot})}$	$V_{DS}=15\text{V}, V_{GS}=4.5, I_D=1.0\text{A}$	0.792	nC
$Q_{gs}$	$V_{DS}=15\text{V}, V_{GS}=4.5, I_D=1.0\text{A}$	0.15	nC
$Q_{gd}$	$V_{DS}=15\text{V}, V_{GS}=4.5, I_D=1.0\text{A}$	0.23	nC
$C_{rss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$	5.0	pF
$C_{iss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$	43	pF
$C_{oss}$	$V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$	8.0	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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