

CMLM0574

**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**N-CHANNEL MOSFET AND**  
**LOW  $V_F$  SCHOTTKY DIODE**



**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
$I_{GSS}, I_{GSSR}$	$V_{GS}=8.0\text{V}, V_{DS}=0$			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  $1.4\text{mm}^2$



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

**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 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	$^\circ\text{C/W}$

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

R4 (1-July 2015)

CMLM0574

**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**N-CHANNEL MOSFET AND**  
**LOW  $V_F$  SCHOTTKY DIODE**



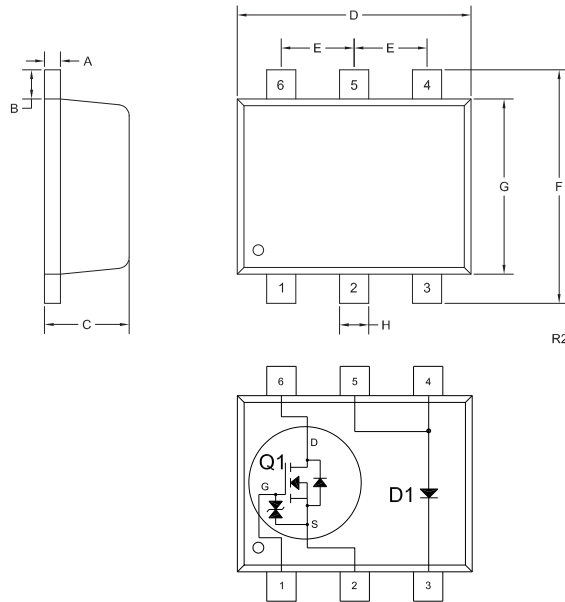
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

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
$C_J$	$V_R=1.0\text{V}$ , $f=1.0\text{MHz}$		50	pF

**SOT-563 CASE - MECHANICAL OUTLINE**



DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.0027	0.007	0.07	0.18
B	0.008		0.20	
C	0.017	0.024	0.45	0.60
D	0.059	0.067	1.50	1.70
E	0.020		0.50	
F	0.059	0.067	1.50	1.70
G	0.043	0.051	1.10	1.30
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R2)

**LEAD CODE:**

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

**MARKING CODE: 57C**

R4 (1-July 2015)

CMLM0574

**MULTI DISCRETE MODULE™  
SURFACE MOUNT SILICON  
N-CHANNEL MOSFET AND  
LOW V<sub>F</sub> SCHOTTKY DIODE**



**SERVICES**

- Bonded Inventory
- Custom Electrical Screening
- Custom Electrical Characteristic Curves
- SPICE Models
- Custom Packaging
- Package Base Options
- Custom Device Development/ Multi Discrete Modules (MDM™)
- Bare Die Available for Hybrid Applications

---

**LIMITATIONS AND DAMAGES DISCLAIMER:** In no event shall Central be liable for any collateral, indirect, punitive, incidental, consequential, or exemplary damages in connection with or arising out of a purchase order or contract or the use of products provided hereunder, regardless of whether Central has been advised of the possibility of such damages. Excluded damages shall include, but not be restricted to: cost of removal or reinstallation, rework, ancillary costs to the procurement of substitute products, loss of profits, loss of savings, loss of use, loss of data, or business interruption. No claim, suit, or action shall be brought against Central more than two (2) years after the related cause of action has occurred.

In no event shall Central's aggregate liability from any warranty, indemnity, or other obligation arising out of or in connection with a purchase order or contract, or any use of any Central product provided hereunder, exceed the total amount paid to Central for the specific products sold under a purchase order or contract with respect to which losses or damages are claimed. The existence of more than one (1) claim against the specific products sold to Buyer under a purchase order or contract shall not enlarge or extend this limit.

Buyer understands and agrees that the foregoing liability limitations are essential elements of a purchase order or contract and that in the absence of such limitations, the material and economic terms of the purchase order or contract would be substantially different.

R4 (1-July 2015)