

CMLM0584

MULTI DISCRETE MODULE™
SURFACE MOUNT SILICON
P-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_{GSSF}, I_{GSSR}	$V_{GS}=8.0\text{V}, V_{DS}=0$			3.0	μA
I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0$			1.0	μA
BV_{DSS}	$V_{GS}=0, I_D=100\mu\text{A}$	30			V
$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	0.5		1.0	V
V_{SD}	$V_{GS}=0, I_S=100\text{mA}$	0.5		1.1	V
$r_{DS(ON)}$	$V_{GS}=4.5\text{V}, I_D=430\text{mA}$			1.1	Ω
$r_{DS(ON)}$	$V_{GS}=2.5\text{V}, I_D=200\text{mA}$			2.0	Ω
$r_{DS(ON)}$	$V_{GS}=1.8\text{V}, I_D=100\text{mA}$			3.3	Ω
g_{FS}	$V_{DS}=10\text{V}, I_D=100\text{mA}$	200			mS

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



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DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM0584 is a Multi Discrete Module™ consisting of a single P-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: 58C

FEATURES:

- ESD protection up to 2kV
- Low $r_{DS(ON)}$ Transistor (1.5Ω 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	$^\circ\text{C}$
θ_{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

R3 (18-February 2014)

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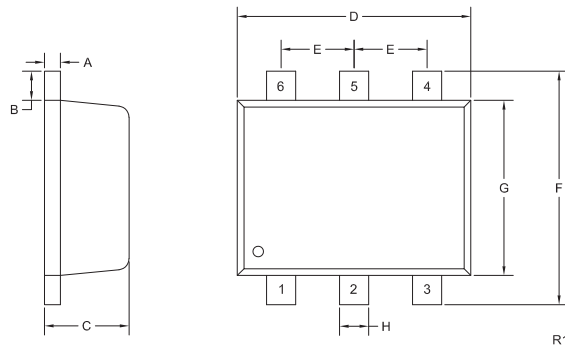
ELECTRICAL CHARACTERISTICS - Q1 - Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

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	μA
I_R	$V_R=30\text{V}$		100	μA
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



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	0.061	0.067	1.55	1.70
G	0.045	0.049	1.15	1.25
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R1)

LEAD CODE:

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

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