

**CMLM0305  
CMLM0305G\***  
**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON  
N-CHANNEL MOSFET AND  
LOW V<sub>F</sub> SCHOTTKY DIODE**



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



**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0305 and CMLM0305G are Multi Discrete Modules™ consisting of a single N-Channel enhancement-mode MOSFET and a low V<sub>F</sub> 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 CODES: CMLM0305: 5C3  
CMLM0305G\*: 5CG**

\* Device is **Halogen Free** by design

**APPLICATIONS:**

- DC / DC Converters
- Battery Powered Portable Equipment

**FEATURES:**

- ESD protection up to 2kV
- Low r<sub>DS(on)</sub> Transistor (3Ω MAX @ V<sub>GS</sub>=1.8V)
- Low V<sub>F</sub> Schottky Diode (0.47V MAX @ 0.5A)

**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	

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

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

Drain-Source Voltage	
Drain-Gate Voltage	
Gate-Source Voltage	
Continuous Drain Current	
Maximum Pulsed Drain Current	

SYMBOL		UNITS
V <sub>DS</sub>	50	V
V <sub>DG</sub>	50	V
V <sub>GS</sub>	12	V
I <sub>D</sub>	280	mA
I <sub>DM</sub>	1.5	A

**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	

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

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =5.0V		100	nA
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =10V		2.0	μA
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =12V		2.0	μA
I <sub>DSS</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0		50	nA
BV <sub>DSS</sub>	V <sub>GS</sub> =0, I <sub>D</sub> =10μA	50		V
V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.49	1.0	V

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>

R5 (15-June 2015)

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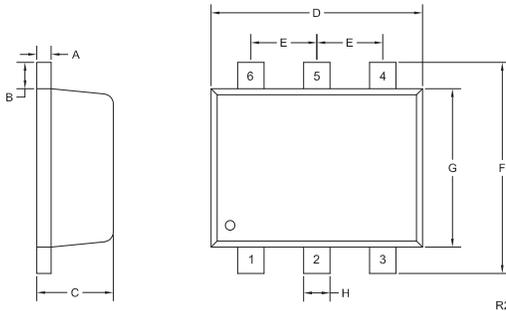
**ELECTRICAL CHARACTERISTICS - Q1 - Continued:**

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$V_{SD}$	$V_{GS}=0, I_S=115mA$			1.4	V
$r_{DS(ON)}$	$V_{GS}=1.8V, I_D=50mA$		1.6	3.0	$\Omega$
$r_{DS(ON)}$	$V_{GS}=2.5V, I_D=50mA$		1.3	2.5	$\Omega$
$r_{DS(ON)}$	$V_{GS}=5.0V, I_D=50mA$		1.1	2.0	$\Omega$
gFS	$V_{DS}=10V, I_D=200mA$	200			mS
$C_{rSS}$	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$			5.0	pF
$C_{iSS}$	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$			50	pF
$C_{oss}$	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$			25	pF

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

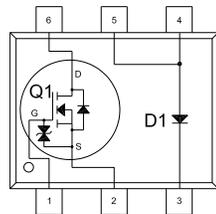
$I_R$	$V_R=10V$			20	$\mu A$
$I_R$	$V_R=30V$			100	$\mu A$
$BV_R$	$I_R=500\mu A$	40			V
$V_F$	$I_F=100\mu A$			0.13	V
$V_F$	$I_F=1.0mA$			0.21	V
$V_F$	$I_F=10mA$			0.27	V
$V_F$	$I_F=100mA$			0.35	V
$V_F$	$I_F=500mA$			0.47	V
$C_J$	$V_R=1.0V, f=1.0MHz$			50	pF

**SOT-563 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	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

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#### **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

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R5 (15-June 2015)