



**CMLM0305T**

**MULTI DISCRETE MODULE™**

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



**PICOmini™**



**SOT-563 CASE**

# Central™

## Semiconductor Corp.

**DESCRIPTION:**

The Central Semiconductor CMLM0305T is a Multi Discrete Module™ consisting of a single N-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: C35**

**FEATURES:**

- Low r<sub>DS(on)</sub> Transistor (1.5Ω MAX @ V<sub>GS</sub>=5.0V)
- Low V<sub>F</sub> Schottky Diode (0.47V MAX @ 0.5A)

**APPLICATIONS:**

- DC / DC Converters
- Battery Powered Portable Equipment

**MAXIMUM RATINGS (SOT-563 Package): (T<sub>A</sub>=25°C)**

	SYMBOL		UNITS
Power Dissipation	P <sub>D</sub>	350	mW (Note 1)
Power Dissipation	P <sub>D</sub>	300	mW (Note 2)
Power Dissipation	P <sub>D</sub>	150	mW (Note 3)
Operating and Storage Junction Temperature	T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C
Thermal Resistance	θ <sub>JA</sub>	357	°C/W

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

	SYMBOL		UNITS
Drain-Source Voltage	V <sub>DS</sub>	50	V
Drain-Gate Voltage	V <sub>DG</sub>	50	V
Gate-Source Voltage	V <sub>GS</sub>	12	V
Continuous Drain Current	I <sub>D</sub>	280	mA
Maximum Pulsed Drain Current	I <sub>DM</sub>	1.5	A

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

	SYMBOL		UNITS
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	40	V
Continuous Forward Current	I <sub>F</sub>	500	mA
Peak Repetitive Forward Current, tp ≤ 1ms	I <sub>FRM</sub>	3.5	A
Forward Surge Current, tp=8ms	I <sub>FSM</sub>	10	A

**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> =5V			50	nA
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =10V			0.5	μA
I <sub>GSSF</sub> , I <sub>GSSR</sub>	V <sub>GS</sub> =12V			1.0	μA
I <sub>DSS</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V			50	nA
BV <sub>DSS</sub>	V <sub>GS</sub> =0V, 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	0.75	1.2		V

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

R1 (11-June 2007)

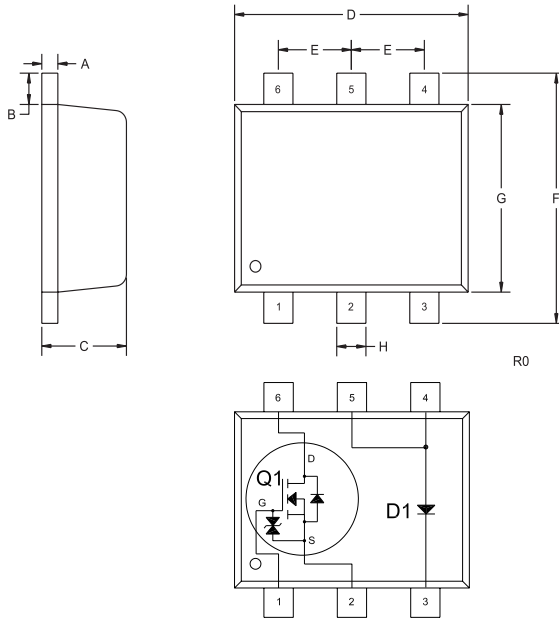
**ELECTRICAL CHARACTERISTICS Q1 (continued)**

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$r_{DS(ON)}$	$V_{GS}=1.8V, I_D=50mA$		1.6	2.3	$\Omega$
$r_{DS(ON)}$	$V_{GS}=2.5V, I_D=50mA$		1.3	1.9	$\Omega$
$r_{DS(ON)}$	$V_{GS}=5.0V, I_D=50mA$		1.1	1.5	$\Omega$
gFS	$V_{DS}=10V, I_D=200mA$	200			mmhos
$C_{rss}$	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$			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
$V_{SD}$	$V_{GS}=0V, I_S=115mA$			1.4	V

**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
$C_T$	$V_R=1.0V, f=1.0MHz$			50	pF

**SOT-563 - 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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