

CMLM0205

**MULTI DISCRETE MODULE™**

**SURFACE MOUNT  
N-CHANNEL MOSFET AND  
LOW  $V_F$  SILICON SCHOTTKY DIODE**



**PICOmini™**



**SOT-563 CASE**

# Central™

**Semiconductor Corp.**

**DESCRIPTION:**

The Central Semiconductor CMLM0205 is a Multi Discrete Module™ consisting of a single N-Channel MOSFET and a Low  $V_F$  Schottky diode packaged in a space saving PICOmini™ SOT-563 case. This device is designed for small signal general purpose applications where size and operational efficiency are prime requirements.

- Combination: N-Channel MOSFET and Low  $V_F$  Schottky Diode.

**MARKING CODE: C25**

**MAXIMUM RATINGS (SOT-563 Package):** ( $T_A=25^\circ\text{C}$ )

Power Dissipation

Operating and Storage

Junction Temperature

Thermal Resistance

**SYMBOL**

$P_D$

350

**UNITS**

mW

$T_J, T_{stg}$

-65 to +150

$^\circ\text{C}$

$\theta_{JA}$

357

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

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

Drain-Source Voltage

Drain-Gate Voltage

Gate-Source Voltage

Continuous Drain Current

Continuous Source Current (Body Diode)

Maximum Pulsed Drain Current

Maximum Pulsed Source Current

**SYMBOL**

$V_{DS}$

60

**UNITS**

V

$V_{DG}$

60

V

$V_{GS}$

40

V

$I_D$

280

mA

$I_S$

280

mA

$I_{DM}$

1.5

A

$I_{SM}$

1.5

A

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

Peak Repetitive Reverse Voltage

Continuous Forward Current

Peak Repetitive Forward Current,  $t_p \leq 1\text{ms}$

Forward Surge Current,  $t_p=8\text{ms}$

**SYMBOL**

$V_{RRM}$

40

**UNITS**

V

$I_F$

500

mA

$I_{FRM}$

3.5

A

$I_{FSM}$

10

A

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

**SYMBOL**

**TEST CONDITIONS**

**MIN**

**MAX**

**UNITS**

$I_{GSSF}$

$V_{GS}=20\text{V}, V_{DS}=0\text{V}$

100

nA

$I_{GSSR}$

$V_{GS}=20\text{V}, V_{DS}=0\text{V}$

100

nA

$I_{DSS}$

$V_{DS}=60\text{V}, V_{GS}=0\text{V}$

1.0

$\mu\text{A}$

$I_{DSS}$

$V_{DS}=60\text{V}, V_{GS}=0\text{V}, T_J=125^\circ\text{C}$

500

$\mu\text{A}$

$I_{D(ON)}$

$V_{GS}=10\text{V}, V_{DS} \geq 2V_{DS(ON)}$

500

mA

$BV_{DSS}$

$V_{GS}=0\text{V}, I_D=10\mu\text{A}$

60

V

$V_{GS(th)}$

$V_{DS}=V_{GS}, I_D=250\mu\text{A}$

1.0

V

$V_{DS(ON)}$

$V_{GS}=10\text{V}, I_D=500\text{mA}$

1.0

V

$V_{DS(ON)}$

$V_{GS}=5.0\text{V}, I_D=50\text{mA}$

0.15

V

$r_{DS(ON)}$

$V_{GS}=10\text{V}, I_D=500\text{mA}$

2.0

$\Omega$

$r_{DS(ON)}$

$V_{GS}=10\text{V}, I_D=500\text{mA}, T_J=125^\circ\text{C}$

3.5

$\Omega$

$r_{DS(ON)}$

$V_{GS}=5.0\text{V}, I_D=50\text{mA}$

3.0

$\Omega$

$r_{DS(ON)}$

$V_{GS}=5.0\text{V}, I_D=50\text{mA}, T_J=125^\circ\text{C}$

5.0

$\Omega$

9FS

$V_{DS} \geq 2V_{DS(ON)}, I_D=200\text{mA}$

80

mmhos

R0 (12-October 2004)

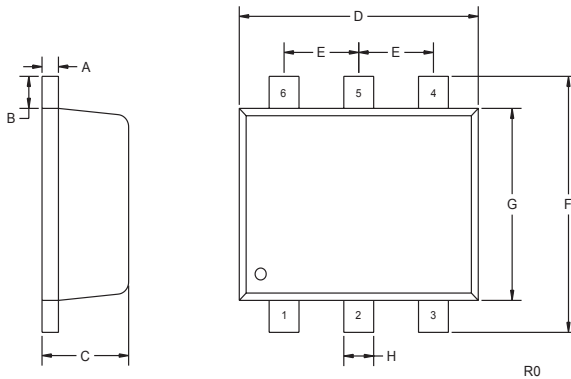
## ELECTRICAL CHARACTERISTICS Q1 (continued)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$C_{rss}$	$V_{DS}=25V, V_{GS}=0, f=1.0MHz$		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
$t_{on}$	$V_{DD}=30V, V_{GS}=10V, I_D=200mA,$		20	ns
$t_{off}$	$R_G=25\Omega, R_L=150\Omega$		20	ns
$V_{SD}$	$V_{GS}=0V, I_S=400mA$		1.2	V

## ELECTRICAL CHARACTERISTICS D1 ( $T_A=25^\circ C$ )

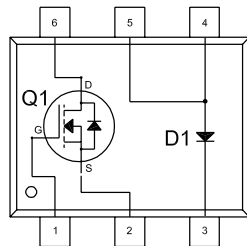
$I_R$	$V_R=10V$		20	$\mu A$
$I_R$	$V_R=30V$		100	$\mu A$
$BV_R$	$I_R=500\mu A$	40		V
$V_F$	$I_F=100\mu A$		0.13	V
$V_F$	$I_F=1.0mA$		0.21	V
$V_F$	$I_F=10mA$		0.27	V
$V_F$	$I_F=100mA$		0.35	V
$V_F$	$I_F=500mA$		0.47	V
$C_T$	$V_R=1.0V, f=1.0MHz$		50	pF

## 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)



MARKING CODE: C25

## LEAD CODE:

- 1) GATE Q1
- 2) SOURCE Q1
- 3) CATHODE D1
- 4) ANODE D1
- 5) ANODE D1
- 6) DRAIN Q1

R0 (12-October 2004)