

**CMLM0205**  
**MULTI DISCRETE MODULE™**  
 SURFACE MOUNT  
 N-CHANNEL MOSFET AND  
 LOW  $V_F$  SILICON SCHOTTKY DIODE



# 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		UNITS
$P_D$	350	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		UNITS
$V_{DS}$	60	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		UNITS
$V_{RRM}$	40	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	2.5	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)



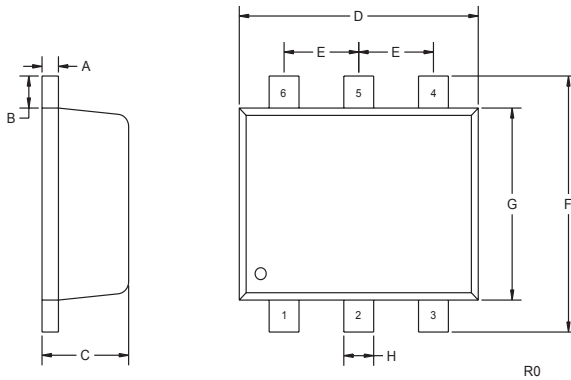
**ELECTRICAL CHARACTERISTICS Q1 (continued)**

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
C <sub>rss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1.0MHz		5.0	pF
C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1.0MHz		50	pF
C <sub>oss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1.0MHz		25	pF
t <sub>on</sub>	V <sub>DD</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =200mA,		20	ns
t <sub>off</sub>	R <sub>G</sub> =25Ω, R <sub>L</sub> =150Ω		20	ns
V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =400mA		1.2	V

**ELECTRICAL CHARACTERISTICS D1 (T<sub>A</sub>=25°C)**

I <sub>R</sub>	V <sub>R</sub> = 10V		20	μA
I <sub>R</sub>	V <sub>R</sub> = 30V		100	μA
BV <sub>R</sub>	I <sub>R</sub> = 500μA	40		V
V <sub>F</sub>	I <sub>F</sub> = 100μA		0.13	V
V <sub>F</sub>	I <sub>F</sub> = 1.0mA		0.21	V
V <sub>F</sub>	I <sub>F</sub> = 10mA		0.27	V
V <sub>F</sub>	I <sub>F</sub> = 100mA		0.35	V
V <sub>F</sub>	I <sub>F</sub> = 500mA		0.47	V
C <sub>T</sub>	V <sub>R</sub> = 1.0V, f=1.0 MHz		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)