

CMLM2205
MULTI DISCRETE MODULE™
SURFACE MOUNT
SILICON SWITCHING NPN TRANSISTOR
AND
LOW V_F SILICON SCHOTTKY DIODE



Central™

Semiconductor Corp.

DESCRIPTION:

The Central Semiconductor CMLM0205 is a Multi Discrete Module™ consisting of a single NPN Transistor and 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: Small Signal Switching NPN Transistor and Low V_F Schottky Diode.
- Complementary Device: **CMLM0705**

MARKING CODE: C22

MAXIMUM RATINGS (SOT-563 Package): (T_A=25°C)

Power Dissipation
Operating and Storage
Junction Temperature
Thermal Resistance

SYMBOL		UNITS
P _D	350	mW
T _J , T _{stg}	-65 to +150	°C
θ _{JA}	357	°C/W

MAXIMUM RATINGS Q1: (T_A=25°C)

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Collector Current

SYMBOL		UNITS
V _{CBO}	100	V
V _{CEO}	45	V
V _{EBO}	6.0	V
I _C	600	mA

MAXIMUM RATINGS D1: (T_A=25°C)

Peak Repetitive Reverse Voltage
Continuous Forward Current
Peak Repetitive Forward Current, tp ≤ 1ms
Forward Surge Current, tp=8ms

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°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I _{CBO}	V _{CB} =60V			10	nA
I _{CBO}	V _{CB} =60V, T _A =125°C			10	μA
I _{CEV}	V _{CE} =60V, V _{EB} =3.0V			10	nA
I _{EBO}	V _{EB} =3.0V			10	nA
BV _{CBO}	I _C =10μA	100	145		V
BV _{CEO}	I _C =10mA	45	53		V
BV _{EBO}	I _E =10μA	6.0			V
V _{CE(SAT)}	I _C =150mA, I _B =15mA		0.09	0.15	V
V _{CE(SAT)}	I _C =500mA, I _B =50mA		0.12	0.50	V
V _{BE(SAT)}	I _C =150mA, I _B =15mA	0.6		1.2	V
V _{BE(SAT)}	I _C =500mA, I _B =50mA			2.0	V
h _{FE}	V _{CE} =10V, I _C =0.1mA	100	210		
h _{FE}	V _{CE} =10V, I _C =1.0mA	100	205		
h _{FE}	V _{CE} =10V, I _C =10mA	100	205		
h _{FE}	V _{CE} =1.0V, I _C =150mA	75	150		
h _{FE}	V _{CE} =10V, I _C =150mA	100		300	
h _{FE}	V _{CE} =10V, I _C =500mA	60	130		

R0 (06-October 2004)

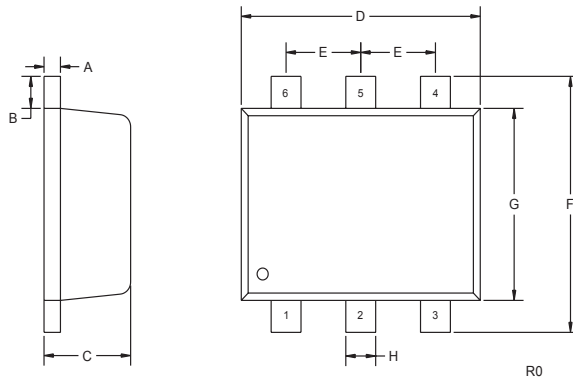
ELECTRICAL CHARACTERISTICS Q1 (continued)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
f_T	$V_{CE}=20V, I_C=20mA, f=100MHz$	300		MHz
C_{ob}	$V_{CB}=10V, I_E=0, f=1.0MHz$		8.0	pF
C_{ib}	$V_{EB}=0.5V, I_C=0, f=1.0MHz$		25	pF
NF	$V_{CE}=10V, I_C=100mA, R_S=1.0k\Omega, f=1.0kHz$		4.0	dB
t_d	$V_{CC}=30V, V_{BE}=0.5, I_C=150mA, I_{B1}=15mA$		10	ns
t_r	$V_{CC}=30V, V_{BE}=0.5, I_C=150mA, I_{B1}=15mA$		25	ns
t_s	$V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA$		225	ns
t_f	$V_{CC}=30V, I_C=150mA, I_{B1}=I_{B2}=15mA$		60	ns

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

I_R	$V_R=10V$		20	μA
I_R	$V_R=30V$		100	μA
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: C22

LEAD CODE:

- 1) EMITTER Q1
- 2) BASE Q1
- 3) CATHODE D1
- 4) ANODE D1
- 5) ANODE D1
- 6) COLLECTOR Q1

R0 (06-October 2004)