

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







SOT-563 CASE

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): ($T_A=25^\circ\text{C}$)

Power Dissipation
Operating and Storage
Junction Temperature
Thermal Resistance

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

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

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
P_D	350	mW
T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
θ_{JA}	357	$^\circ\text{C/W}$

SYMBOL		UNITS
V_{CBO}	100	V
V_{CEO}	45	V
V_{EBO}	6.0	V
I_C	600	mA

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	TYP	MAX	UNITS
I_{CBO}	$V_{CB}=60\text{V}$			10	nA
I_{CBO}	$V_{CB}=60\text{V}, T_A=125^\circ\text{C}$			10	μA
I_{CEV}	$V_{CE}=60\text{V}, V_{EB}=3.0\text{V}$			10	nA
I_{EBO}	$V_{EB}=3.0\text{V}$			10	nA
BV_{CBO}	$I_C=10\mu\text{A}$	100	145		V
BV_{CEO}	$I_C=10\text{mA}$	45	53		V
BV_{EBO}	$I_E=10\mu\text{A}$	6.0			V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.09	0.15	V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.12	0.50	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.6		1.2	V
$V_{BE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			2.0	V
h_{FE}	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	100	210		
h_{FE}	$V_{CE}=10\text{V}, I_C=1.0\text{mA}$	100	205		
h_{FE}	$V_{CE}=10\text{V}, I_C=10\text{mA}$	100	205		
h_{FE}	$V_{CE}=1.0\text{V}, I_C=150\text{mA}$	75	150		
h_{FE}	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100		300	
h_{FE}	$V_{CE}=10\text{V}, I_C=500\text{mA}$	60	130		

R0 (06-October 2004)

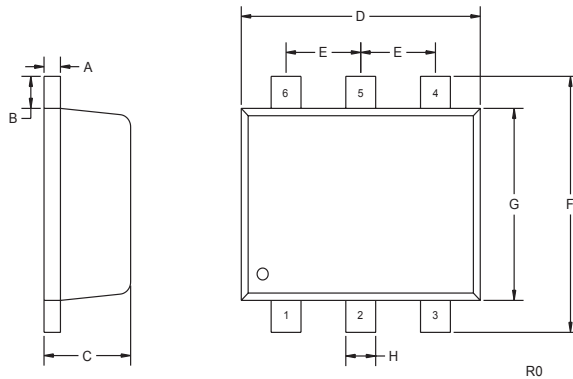
ELECTRICAL CHARACTERISTICS Q1 (continued)

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 ($T_A=25^\circ C$)

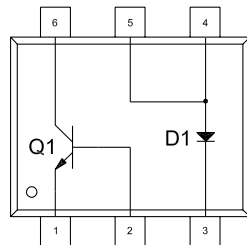
I_R	$V_R=10V$		20	μA
I_R	$V_R=30V$		100	μA
BV_R	$I_R=500\mu A$	40		V
V_F	$I_F=100\mu A$		0.13	V
V_F	$I_F=1.0mA$		0.21	V
V_F	$I_F=10mA$		0.27	V
V_F	$I_F=100mA$		0.35	V
V_F	$I_F=500mA$		0.47	V
C_T	$V_R=1.0V$, $f=1.0MHz$		50	pF

SOT-563 - MECHANICAL OUTLINE



SYMBOL	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)