

CMLM2205
MULTI DISCRETE MODULE™

SURFACE MOUNT
SILICON SWITCHING NPN TRANSISTOR
AND
LOW V_F SILICON SCHOTTKY DIODE

PICOmini™



MDM™
Multi Discrete Module

SOT-563 CASE



www.centra-semi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM2205 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 - CASE: ($T_A=25^\circ\text{C}$)

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
Continuous Collector Current

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

Peak Repetitive Reverse Voltage
Continuous Forward Current
Peak Repetitive Forward Current, $t_p \leq 1.0\text{ms}$
Peak Forward Surge Current, $t_p = 8.0\text{ms}$

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		

R2 (18-January 2010)

CMLM2205
MULTI DISCRETE MODULE™

SURFACE MOUNT
SILICON SWITCHING NPN TRANSISTOR
AND
LOW V_F SILICON SCHOTTKY DIODE



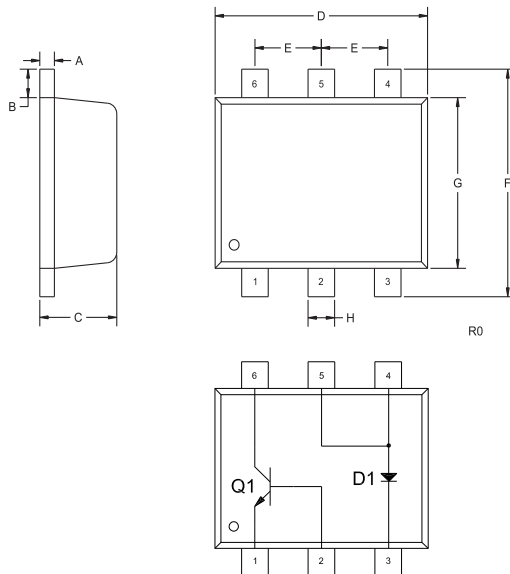
ELECTRICAL CHARACTERISTICS - Q1 - Continued: ($T_A=25^\circ\text{C}$)

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

ELECTRICAL CHARACTERISTICS - D1: ($T_A=25^\circ\text{C}$)

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

SOT-563 CASE - 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) Emitter Q1
- 2) Base Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Collector Q1

MARKING CODE: C22

R2 (18-January 2010)