

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



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DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM2205 is a Multi Discrete Module™ consisting of a single NPN transistor and Schottky diode packaged in a space saving 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°C)

Power Dissipation
 Operating and Storage Junction Temperature
 Thermal Resistance

MAXIMUM RATINGS - Q1: (T_A=25°C)

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

MAXIMUM RATINGS - D1: (T_A=25°C)

Peak Repetitive Reverse Voltage
 Continuous Forward Current
 Peak Repetitive Forward Current, t_p≤1.0ms
 Peak Forward Surge Current, t_p=8.0ms

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

R4 (1-July 2015)

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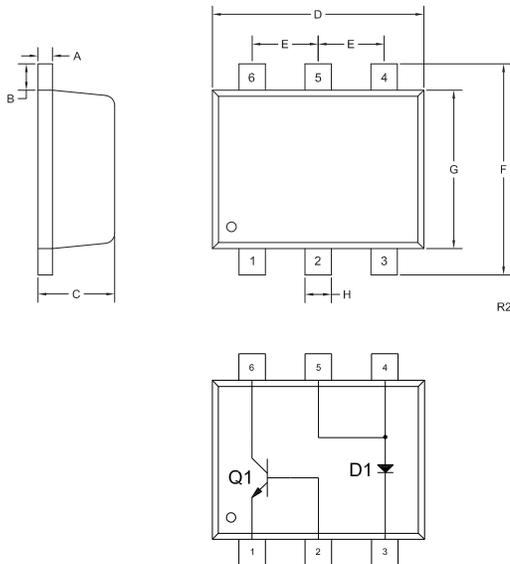
ELECTRICAL CHARACTERISTICS - Q1 - Continued: (T_A=25°C)

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 =1.0kΩ, 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°C)

I _R	V _R =10V		20	μA
I _R	V _R =30V		100	μA
BV _R	I _R =500μA	40		V
V _F	I _F =100μA		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 _J	V _R =1.0V, f=1.0MHz		50	pF

SOT-563 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.0027	0.007	0.07	0.18
B	0.008		0.20	
C	0.017	0.024	0.45	0.60
D	0.059	0.067	1.50	1.70
E	0.020		0.50	
F	0.059	0.067	1.50	1.70
G	0.043	0.051	1.10	1.30
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R2)

LEAD CODE:

- 1) Emitter Q1
- 2) Base Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Collector Q1

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SERVICES

- Bonded Inventory
- Custom Electrical Screening
- Custom Electrical Characteristic Curves
- SPICE Models
- Custom Packaging
- Package Base Options
- Custom Device Development/ Multi Discrete Modules (MDM™)
- Bare Die Available for Hybrid Applications

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