

CMLM3405
MULTI DISCRETE MODULE™
 SURFACE MOUNT
 HIGH CURRENT
 LOW $V_{CE(SAT)}$ SILICON NPN TRANSISTOR
 AND
 LOW V_F SILICON SCHOTTKY DIODE



Central™

Semiconductor Corp.

DESCRIPTION:

The Central Semiconductor CMLM3405 is a single NPN Transistor and Schottky Diode packaged in a space saving SOT-563 case and designed for small signal general purpose applications where size and operational efficiency are prime requirements.

- Complementary Device: **CMLM7405**
- Combination High Current Low $V_{CE(SAT)}$ Transistor and Low V_F Schottky Diode.

MARKING CODE: C53

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	$^\circ\text{C}$
θ_{JA}	357	$^\circ\text{C/W}$

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

Collector-Base Voltage
 Collector-Emitter Voltage
 Emitter-Base Voltage
 Collector Current
 Collector Current (Peak)

SYMBOL		UNITS
V_{CB0}	40	V
V_{CEO}	25	V
V_{EBO}	6.0	V
I_C	1.0	A
I_{CM}	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: ($T_A=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_{CB0}	$V_{CB}=40\text{V}$			100	nA
I_{EBO}	$V_{EB}=6.0\text{V}$			100	nA
BV_{CB0}	$I_C=100\mu\text{A}$	40			V
BV_{CEO}	$I_C=10\text{mA}$	25			V
BV_{EBO}	$I_E=100\mu\text{A}$	6.0			V
$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$		20	50	mV
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=10\text{mA}$		35	75	mV
$V_{CE(SAT)}$	$I_C=200\text{mA}, I_B=20\text{mA}$		75	150	mV
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$		130	250	mV
$V_{CE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$		200	400	mV
$V_{CE(SAT)}$	$I_C=1.0\text{A}, I_B=100\text{mA}$		250	450	mV
$V_{BE(SAT)}$	$I_C=800\text{mA}, I_B=80\text{mA}$			1.1	V
$V_{BE(ON)}$	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$			0.9	V

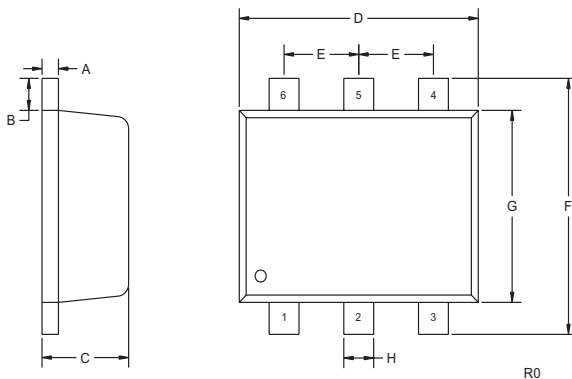
ELECTRICAL CHARACTERISTICS Q1 (continued)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
h_{FE}	$V_{CE}=1.0V, I_C=10mA$	100		
h_{FE}	$V_{CE}=1.0V, I_C=100mA$	100	300	
h_{FE}	$V_{CE}=1.0V, I_C=500mA$	100		
h_{FE}	$V_{CE}=1.0V, I_C=1.0A$	50		
f_T	$V_{CE}=10V, I_C=50mA, f=100MHz$	100		MHz
C_{ob}	$V_{CB}=10V, I_E=0, f=1.0MHz$		10	pF

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: C53

LEAD CODE:

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

R0 (23-March 2005)