

**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	$^\circ\text{C}$
$\theta_{JA}$	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
$V_{CBO}$	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
$I_{CBO}$	$V_{CB}=40\text{V}$			100	nA
$I_{EBO}$	$V_{EB}=6.0\text{V}$			100	nA
$BV_{CBO}$	$I_C=100\mu\text{A}$	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

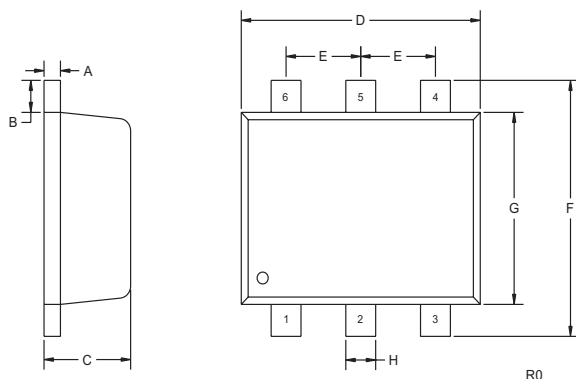
## ELECTRICAL CHARACTERISTICS Q1 (continued)

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 ( $T_A=25^\circ C$ )

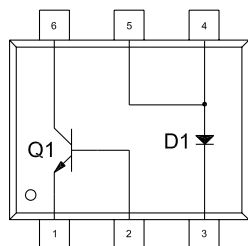
$I_R$	$V_R=10V$		20	$\mu A$
$I_R$	$V_R=30V$		100	$\mu A$
$BV_R$	$I_R=500\mu A$	40		V
$V_F$	$I_F=100\mu A$		0.13	V
$V_F$	$I_F=1.0mA$		0.21	V
$V_F$	$I_F=10mA$		0.27	V
$V_F$	$I_F=100mA$		0.35	V
$V_F$	$I_F=500mA$		0.47	V
$C_T$	$V_R=1.0V, f=1.0MHz$		50	pF

## 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: 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)