CMLM0405

MULTI DISCRETE MODULE™

SURFACE MOUNT SILICON
LOW $V_{CE(SAT)}$ NPN TRANSISTOR AND
LOW V_F SCHOTTKY DIODE

SOT-563 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM0405 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: **CMLM0605**
- Combination Low $V_{CE(SAT)}$ Transistor and Low V_F Schottky Diode.

MARKING CODE: C45

MAXIMUM RATINGS - CASE: (T_A=25°C)	**SYMBOL**		**UNITS**
Power Dissipation	P_D	350	mW
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150	°C
Thermal Resistance	Θ_{JA}	357	°C/W
MAXIMUM RATINGS - Q1: (T_A=25°C)	**SYMBOL**		**UNITS**
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Continuous Collector Current	I_C	200	mA
MAXIMUM RATINGS - D1: (T_A=25°C)	**SYMBOL**		**UNITS**
Peak Repetitive Reverse Voltage	V_{RRM}	40	V
Continuous Forward Current	I_F	500	mA
Peak Repetitive Forward Current, tp≤1.0ms	I_{FRM}	3.5	A
Peak Forward Surge Current, tp=8.0ms	I_{FSM}	10	A

ELECTRICAL CHARACTERISTICS - Q1: (T_A=25°C unless otherwise noted)

SYMBOL	**TEST CONDITIONS**	**MIN**	**TYP**	**MAX**	**UNITS**
I_{CEV}	V_{CE}=30V, V_{EB}=3.0V			50	nA
BV_{CBO}	I_C=10μA	60	120		V
BV_{CEO}	I_C=1.0mA	40	60		V
BV_{EBO}	I_E=10μA	6.0	7.5		V
$V_{CE(SAT)}$	I_C=10mA, I_B=1.0mA		0.057	0.100	V
$V_{CE(SAT)}$	I_C=50mA, I_B=5.0mA		0.090	0.200	V
$V_{BE(SAT)}$	I_C=10mA, I_B=1.0mA	0.65	0.75	0.85	V
$V_{BE(SAT)}$	I_C=50mA, I_B=5.0mA		0.85	0.95	V
h_{FE}	V_{CE}=1.0V, I_C=0.1mA	90	180		
h_{FE}	V_{CE}=1.0V, I_C=1.0mA	100	185		
h_{FE}	V_{CE}=1.0V, I_C=10mA	100	180	300	
h_{FE}	V_{CE}=1.0V, I_C=50mA	70	150		
h_{FE}	V_{CE}=1.0V, I_C=100mA	30	90		
f_T	V_{CE}=20V, I_C=10mA, f=100MHz	300			MHz
C_{ob}	V_{CB}=5.0V, I_E=0, f=1.0MHz			4.0	pF
C_{ib}	V_{BE}=0.5V, I_C=0, f=1.0MHz			8.0	pF
h_{ie}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz		1.0	12	kΩ
h_{re}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz		0.1	10	$X10^{-4}$

R4 (15-June 2015)

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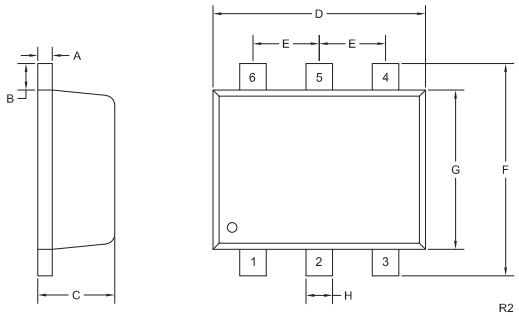
ELECTRICAL CHARACTERISTICS - Q1 - Continued:

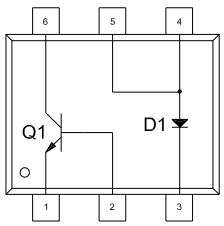
SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
h_{fe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	100	400	
h_{oe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	1.0	60	μS
NF	V_{CE}=5.0V, I_C=100μA, R_S =1.0KΩ, f=10Hz to 15.7kHz		4.0	dB
t_d	V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA		35	ns
t_r	V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA		35	ns
t_s	V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA		200	ns
t_f	V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA		50	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





DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	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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- Custom Electrical Characteristic Curves
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- Package Base Options
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