CMLM8205

MULTI DISCRETE MODULE™

SURFACE MOUNT SILICON P-CHANNEL MOSFET AND LOW V_F SCHOTTKY DIODE

SOT-563 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM8205 is a Multi Discrete Module™ consisting of a single P-Channel enhancement-mode MOSFET and a low V_F Schottky diode packaged in a space saving SOT-563 surface mount case. This device is designed for small signal general purpose applications where size and operational efficiency are prime requirements.

MARKING CODE: C85

APPLICATIONS:

- DC-DC Converters
- Battery Powered Portable Equipment

FEATURES:

- Low $r_{DS(on)}$ Transistor (3.0Ω MAX @ V_{GS}=5.0V)
- Low V_F Shottky Diode (0.47V MAX @ 0.5A)

MAXIMUM RATINGS - CASE: (T_A=25°C)	**SYMBOL**		**UNITS**
Power Dissipation (Note 1)	P_D	350	mW
Power Dissipation (Note 2)	P_D	300	mW
Power Dissipation (Note 3)	P_D	150	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**
Drain-Source Voltage	V_{DS}	50	V
Drain-Gate Voltage	V_{DG}	50	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current	I_D	280	mA
Continuous Source Current (Body Diode)	I_S	280	mA
Maximum Pulsed Drain Current	I_{DM}	1.5	A
Maximum Pulsed Source Current	I_{SM}	1.5	A

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**	**MAX**	**UNITS**
I_{GSSF}, I_{GSSR}	V_{GS}=20V, V_{DS}=0		100	nA
I_{DSS}	V_{DS}=50V, V_{GS}=0		1.0	μA
I_{DSS}	V_{DS}=50V, V_{GS}=0, T_J=125°C		500	μA
$I_{D(ON)}$	V_{GS}=10V, V_{DS}=10V	50		mA
BV_{DSS}	V_{GS}=0, I_D=10μA	50		V
$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	2.5	V

Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0mm^2
(2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm^2
(3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm^2

R2 (18-February 2014)

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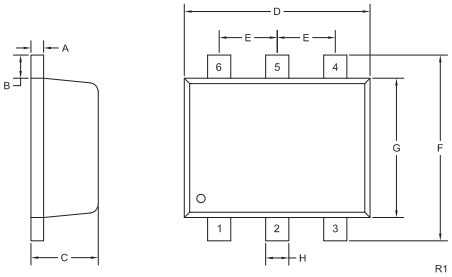
ELECTRICAL CHARACTERISTICS - Q1 - Continued:

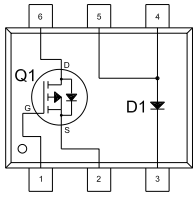
SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$V_{DS(ON)}$	V_{GS}=10V, I_D=500mA		1.5	V
$V_{DS(ON)}$	V_{GS}=5.0V, I_D=50mA		0.15	V
V_{SD}	V_{GS}=0, I_S=115mA		1.3	V
$r_{DS(ON)}$	V_{GS}=10V, I_D=500mA		2.5	Ω
$r_{DS(ON)}$	V_{GS}=10V, I_D=500mA, T_J=125°C		4.0	Ω
$r_{DS(ON)}$	V_{GS}=5.0V, I_D=50mA		3.0	Ω
$r_{DS(ON)}$	V_{GS}=5.0V, I_D=50mA, T_J=125°C		5.0	Ω
g_{FS}	V_{DS} =10V, I_D=200mA	200		mS
C_{rss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		7.0	pF
C_{iss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		70	pF
C_{oss}	V_{DS}=25V, V_{GS}=0, f=1.0MHz		15	pF
t_{on}, t_{off}	V_{DD}=30V, V_{GS}=10V, I_D=200mA, R_G=25Ω, R_L=150Ω		20	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	0.061	0.067	1.55	1.70
G	0.045	0.049	1.15	1.25
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R1)

LEAD CODE:
1) Gate Q1
2) Source Q1
3) Cathode D1
4) Anode D1
5) Anode D1
6) Drain Q1

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