

CMLM0585

**MULTI DISCRETE MODULE™  
SURFACE MOUNT SILICON  
P-CHANNEL MOSFET AND  
LOW V<sub>F</sub> SCHOTTKY DIODE**



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLM0585 is a Multi Discrete Module™ consisting of a single P-Channel enhancement-mode MOSFET and a low V<sub>F</sub> 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: 85C**

**FEATURES:**

- High current MOSFET (I<sub>D</sub>=650mA)
- ESD protection up to 1800V (Human Body Model)
- Low r<sub>DS(on)</sub> MOSFET (0.5Ω MAX @ V<sub>GS</sub>=2.5V)
- Low V<sub>F</sub> Schottky diode (0.47V MAX @ 0.5A)

**APPLICATIONS:**

- DC-DC converters
- Boost converters
- Motor drive controls
- Battery powered portable equipment

**MAXIMUM RATINGS - CASE: (T<sub>A</sub>=25°C)**

Power Dissipation (Note 1)  
 Power Dissipation (Note 2)  
 Power Dissipation (Note 3)  
 Operating and Storage Junction Temperature  
 Thermal Resistance (Note 1)

SYMBOL		UNITS
P <sub>D</sub>	350	mW
P <sub>D</sub>	300	mW
P <sub>D</sub>	150	mW
T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C
θ <sub>JA</sub>	357	°C/W

**MAXIMUM RATINGS - Q1: (T<sub>A</sub>=25°C)**

Drain-Source Voltage  
 Gate-Source Voltage  
 Continuous Drain Current

SYMBOL		UNITS
V <sub>DS</sub>	20	V
V <sub>GS</sub>	8.0	V
I <sub>D</sub>	650	mA

**MAXIMUM RATINGS - D1: (T<sub>A</sub>=25°C)**

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

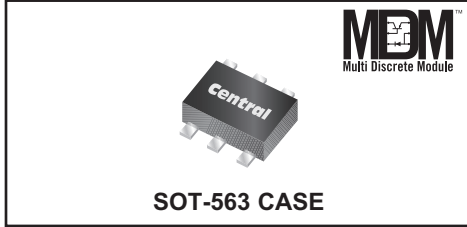
SYMBOL		UNITS
V <sub>R</sub> RM	40	V
I <sub>F</sub>	500	mA
I <sub>F</sub> RM	3.5	A
I <sub>F</sub> SM	10	A

**ELECTRICAL CHARACTERISTICS - Q1: (T<sub>A</sub>=25°C unless otherwise noted)**

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>GSS</sub> F, I <sub>GSS</sub> R	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =0			10	μA
I <sub>DSS</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0			100	nA
BV <sub>DSS</sub>	V <sub>GS</sub> =0, I <sub>D</sub> =250μA	20			V
V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5		1.0	V
V <sub>SD</sub>	V <sub>GS</sub> =0, I <sub>S</sub> =250mA			1.1	V
r <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =350mA		0.25	0.36	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =2.5V, I <sub>D</sub> =300mA		0.37	0.5	Ω
r <sub>DS(ON)</sub>	V <sub>GS</sub> =1.8V, I <sub>D</sub> =150mA			0.8	Ω

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

R4 (18-February 2014)



CMLM0585

**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**P-CHANNEL MOSFET AND**  
**LOW V<sub>F</sub> SCHOTTKY DIODE**



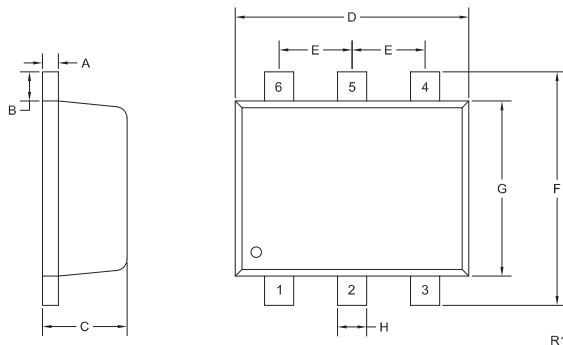
**ELECTRICAL CHARACTERISTICS - Q1 Continued:** (T<sub>A</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =200mA	200			mS
C <sub>rss</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0, f=1.0MHz		25		pF
C <sub>iss</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0, f=1.0MHz		100		pF
C <sub>oss</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =0, f=1.0MHz		21		pF
Q <sub>g(tot)</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA		1.2		nC
Q <sub>gs</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA		0.24		nC
Q <sub>gd</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA		0.36		nC
t <sub>on</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA, R <sub>G</sub> =10Ω		38		ns
t <sub>off</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA, R <sub>G</sub> =10Ω		48		ns

**ELECTRICAL CHARACTERISTICS - D1:** (T<sub>A</sub>=25°C)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I <sub>R</sub>	V <sub>R</sub> =10V			20	μA
I <sub>R</sub>	V <sub>R</sub> =30V			100	μA
BV <sub>R</sub>	I <sub>R</sub> =500μA	40			V
V <sub>F</sub>	I <sub>F</sub> =100μA			0.13	V
V <sub>F</sub>	I <sub>F</sub> =1.0mA			0.21	V
V <sub>F</sub>	I <sub>F</sub> =10mA			0.27	V
V <sub>F</sub>	I <sub>F</sub> =100mA			0.35	V
V <sub>F</sub>	I <sub>F</sub> =500mA			0.47	V
C <sub>J</sub>	V <sub>R</sub> =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	0.061	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

**MARKING CODE: 85C**

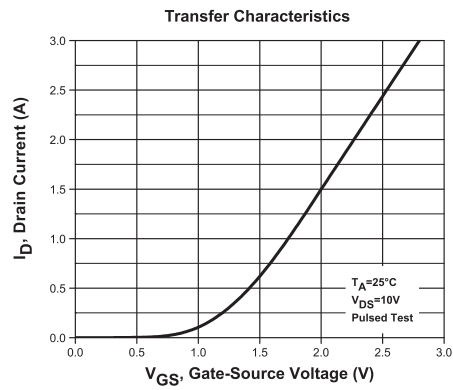
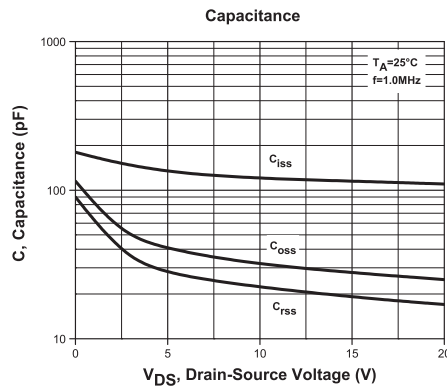
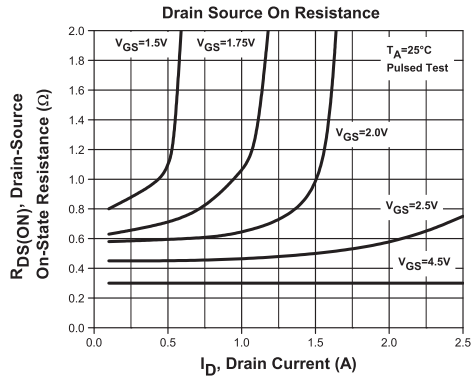
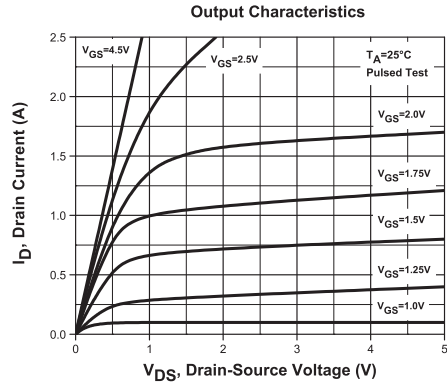
R4 (18-February 2014)

CMLM0585

**MULTI DISCRETE MODULE™**  
**SURFACE MOUNT SILICON**  
**P-CHANNEL MOSFET AND**  
**LOW  $V_F$  SCHOTTKY DIODE**



### MOSFET TYPICAL ELECTRICAL CHARACTERISTICS



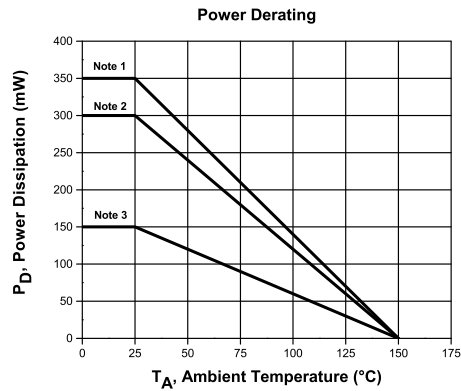
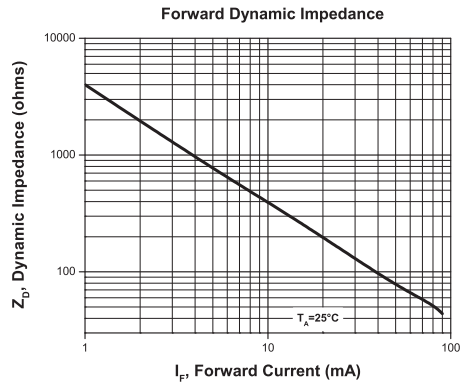
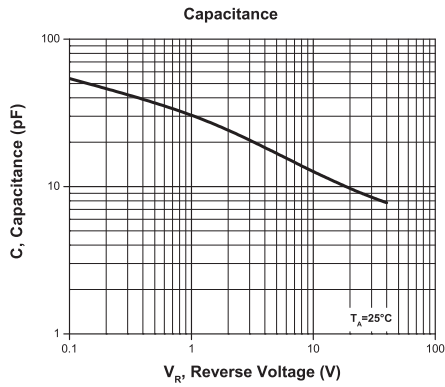
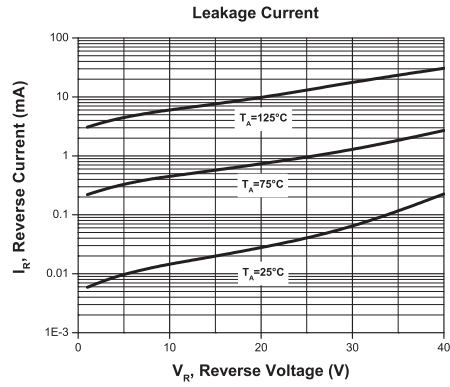
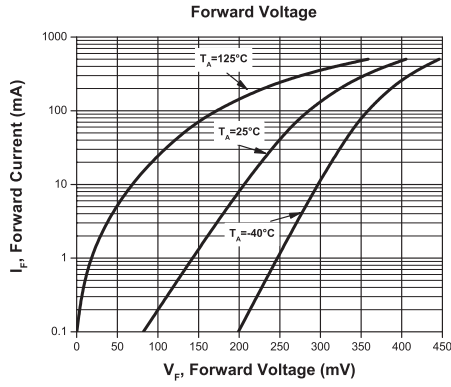
R4 (18-February 2014)

CMLM0585

**MULTI DISCRETE MODULE™**  
SURFACE MOUNT SILICON  
P-CHANNEL MOSFET AND  
LOW  $V_F$  SCHOTTKY DIODE



**DIODE TYPICAL ELECTRICAL CHARACTERISTICS**



R4 (18-February 2014)