

CMLM0585

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



MDM™
Multi Discrete Module

SOT-563 CASE



www.centra-semi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMLM0585 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: 85C

FEATURES:

- High current MOSFET (I_D=650mA)
- ESD protection up to 1800V (Human Body Model)
- Low r_{DS(on)} MOSFET (0.5Ω MAX @ V_{GS}=2.5V)
- Low V_F Schottky diode (0.47V MAX @ 0.5A)

APPLICATIONS:

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

MAXIMUM RATINGS - CASE: (T_A=25°C)

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

MAXIMUM RATINGS - Q1: (T_A=25°C)

Drain-Source Voltage
Gate-Source Voltage
Continuous Drain Current

MAXIMUM RATINGS - D1: (T_A=25°C)

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

SYMBOL		UNITS
P _D	350	mW
P _D	300	mW
P _D	150	mW
T _J , T _{stg}	-65 to +150	°C
Θ _{JA}	357	°C/W

SYMBOL		UNITS
V _{DS}	20	V
V _{GS}	8.0	V
I _D	650	mA

SYMBOL		UNITS
V _{RRM}	40	V
I _F	500	mA
I _{FRM}	3.5	A
I _{FSM}	10	A

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

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I _{GSSF} , I _{GSSR}	V _{GS} =4.5V, V _{DS} =0			10	μA
I _{DSS}	V _{DS} =16V, V _{GS} =0			100	nA
BV _{DSS}	V _{GS} =0, I _D =250μA	20			V
V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.0	V
V _{SD}	V _{GS} =0, I _S =250mA			1.1	V
r _{DS(ON)}	V _{GS} =4.5V, I _D =350mA		0.25	0.36	Ω
r _{DS(ON)}	V _{GS} =2.5V, I _D =300mA		0.37	0.5	Ω
r _{DS(ON)}	V _{GS} =1.8V, I _D =150mA			0.8	Ω

Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0mm²

(2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm²

(3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm²

R5 (1-July 2015)

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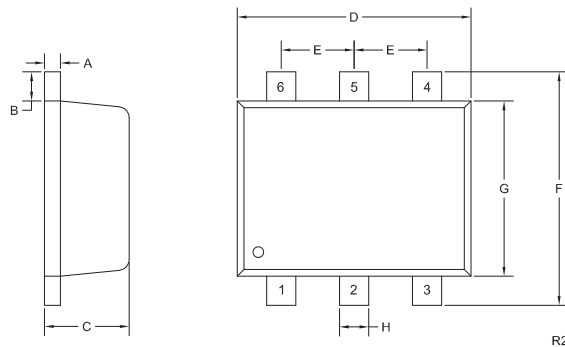
ELECTRICAL CHARACTERISTICS - Q1 Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
g_{FS}	$V_{DS}=10\text{V}$, $I_D=200\text{mA}$	200			mS
C_{rss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		25		pF
C_{iss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		100		pF
C_{oss}	$V_{DS}=16\text{V}$, $V_{GS}=0$, $f=1.0\text{MHz}$		21		pF
$Q_{g(tot)}$	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$		1.2		nC
Q_{gs}	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$		0.24		nC
Q_{gd}	$V_{DS}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$		0.36		nC
t_{on}	$V_{DD}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$, $R_G=10\Omega$		38		ns
t_{off}	$V_{DD}=10\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=200\text{mA}$, $R_G=10\Omega$		48		ns

ELECTRICAL CHARACTERISTICS - D1: ($T_A=25^\circ\text{C}$)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
I_R	$V_R=10\text{V}$			20	μA
I_R	$V_R=30\text{V}$			100	μA
BV_R	$I_R=500\mu\text{A}$	40			V
V_F	$I_F=100\mu\text{A}$			0.13	V
V_F	$I_F=1.0\text{mA}$			0.21	V
V_F	$I_F=10\text{mA}$			0.27	V
V_F	$I_F=100\text{mA}$			0.35	V
V_F	$I_F=500\text{mA}$			0.47	V
C_J	$V_R=1.0\text{V}$, $f=1.0\text{MHz}$			50	pF

SOT-563 CASE - MECHANICAL OUTLINE



SYMBOL	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	0.059	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) Gate Q1
- 2) Source Q1
- 3) Cathode D1
- 4) Anode D1
- 5) Anode D1
- 6) Drain Q1

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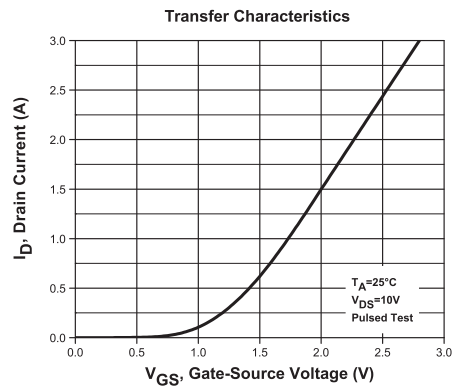
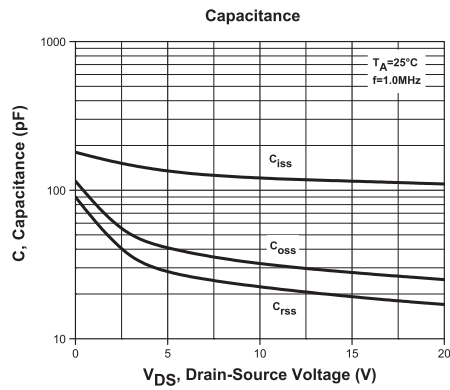
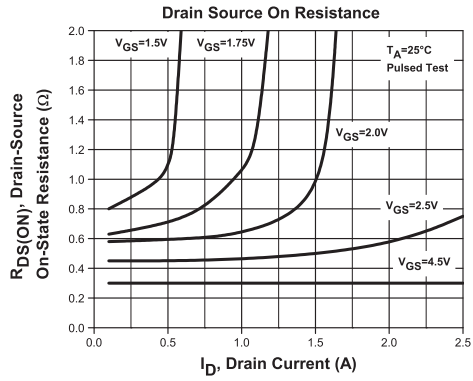
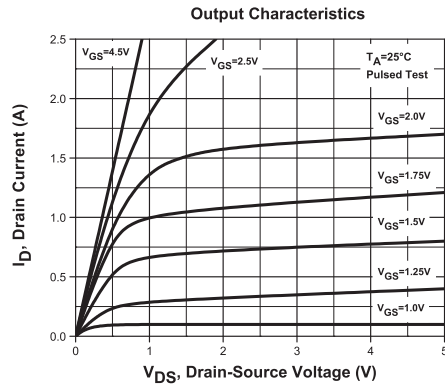
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MOSFET TYPICAL ELECTRICAL CHARACTERISTICS



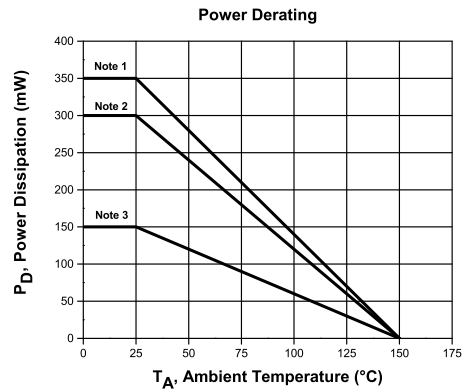
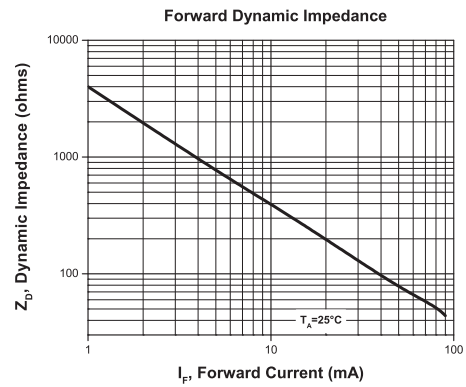
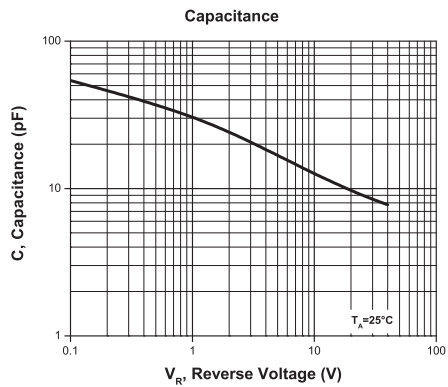
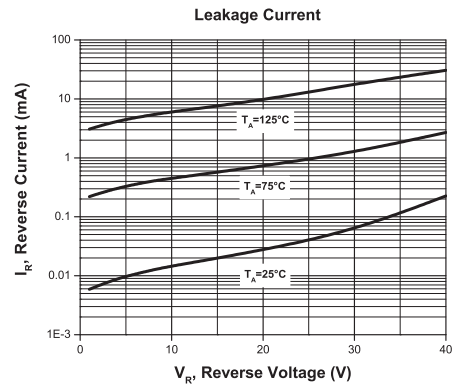
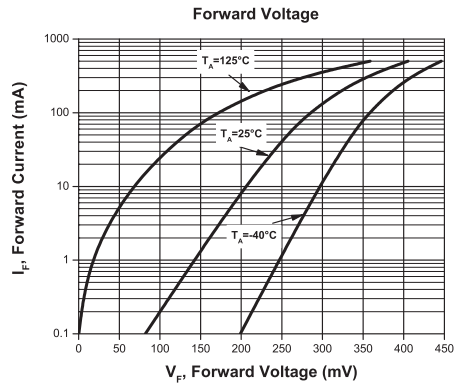
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DIODE TYPICAL ELECTRICAL CHARACTERISTICS



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OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

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