

CSMF05C CSMF15C  
CSMF12C CSMF24C

**SURFACE MOUNT SILICON  
5-LINE TVS/ZENER ARRAY  
5.0 VOLT THRU 24 VOLT**



**SOT-363 CASE**



[www.centralemi.com](http://www.centralemi.com)

#### DESCRIPTION:

The CENTRAL SEMICONDUCTOR CSMF05VC Series is a 5 Line TVS/Zener Array packaged in an SOT-363 surface mount case. These devices are designed to protect sensitive electronic equipment, such as computers, networking communication, cell phones and instrumentation from over-voltage transients and ESD damage. Available in voltages ranging from 5.0V to 24V.

#### MARKING CODES:

CSMF05C: CF05 CSMF15C: CF15  
CSMF12C: CF12 CSMF24C: CF24

#### APPLICATIONS:

- Hand held portable equipment
- Networks, servers and telecom
- Desktop and notebook computers
- Instrumentation

#### FEATURES:

- Very low clamping voltage
- Low leakage current
- 100W power dissipation
- SMD SOT-363 package

#### MAXIMUM RATINGS: ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Peak Pulse Power (8x20 $\mu\text{s}$ )

Electrical Fast Transient (IEC 61000-4-4) (5x50ns)

ESD Voltage (IEC 61000-4-2, Air)

ESD Voltage (IEC 61000-4-2, Contact)

Operating and Storage Junction Temperature

#### SYMBOL

$P_{pp}$

EFT

$V_{ESD}$

$V_{ESD}$

$T_J, T_{stg}$

100

40

20

15

-55 to +150

#### UNITS

W

A

kV

kV

$^\circ\text{C}$

#### ELECTRICAL CHARACTERISTICS PER DIODE: ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Type	Maximum Reverse Stand-Off Voltage	Minimum Reverse Breakdown Voltage		Maximum Reverse Leakage Current		Maximum Clamping Voltage (8x20 $\mu\text{s}$ )		Maximum Clamping Voltage (8x20 $\mu\text{s}$ )		Typical TLP Clamping Voltage (Note 1)		Typical Dynamic Resistance (Note 1)	Maximum Off State Junction Capacitance ( $V_R=0, f=1.0\text{MHz}$ )
	$V_{RWM}$	$V_{BR}$	@ $I_{BR}$	$I_R$	@ $V_R$	$V_{Cl}$	@ $I_{PP}$	$V_{Cl}$	@ $I_{PP}$	$V_{CL}$	@ $I_{PP}$	$R_{DYN}$	$C_J$
	V	V	mA	$\mu\text{A}$	V	V	A	V	A	V	A	$\Omega$	pF
CSMF05C	5.0	6.2	1.0	0.5	5.0	10	5.0	11	9.0	10.5	9.6	0.38	100
										12	13.5		
CSMF12C	12	13.3	1.0	0.5	12	18	3.0	20	5.0	15	1.25	0.62	50
										22	12.5		
CSMF15C	15	16.6	1.0	0.5	15	23	3.0	25	4.0	20	3.1	0.89	40
										25	8.7		
CSMF24C	24	26.7	1.0	0.5	24	35	1.0	45	2.0	34	4.0	1.2	30
										40	9.0		

Note 1: Transmission Line Pulse (TLP) conditions:  $Z_0=50\Omega$ ,  $t_p=100\text{ns}$

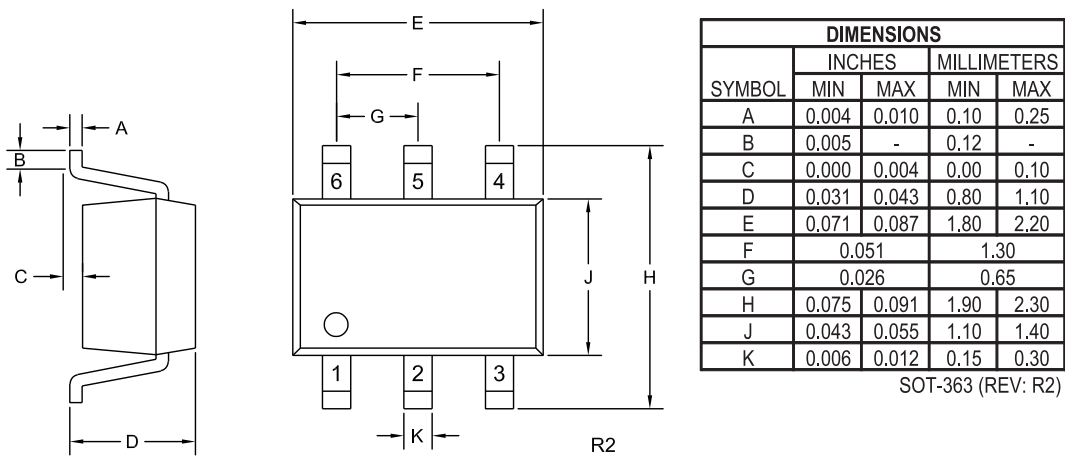
R5 (9-November 2015)

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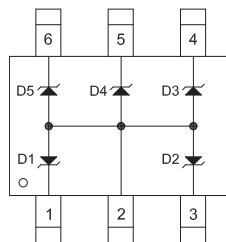
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### SOT-363 - CASE - MECHANICAL OUTLINE



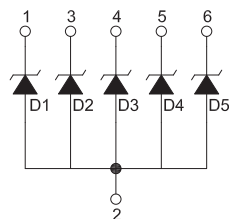
### PIN CONFIGURATION



### LEAD CODE:

- 1) Cathode D1
- 2) Anode D1, D2, D3, D4, D5
- 3) Cathode D2
- 4) Cathode D3
- 5) Cathode D4
- 6) Cathode D5

### SCHEMATIC



### MARKING CODES:

CSMF05C: CF05  
CSMF12C: CF12  
CSMF15C: CF15  
CSMF24C: CF24

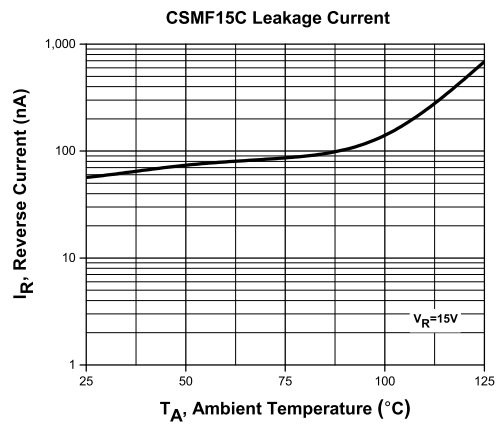
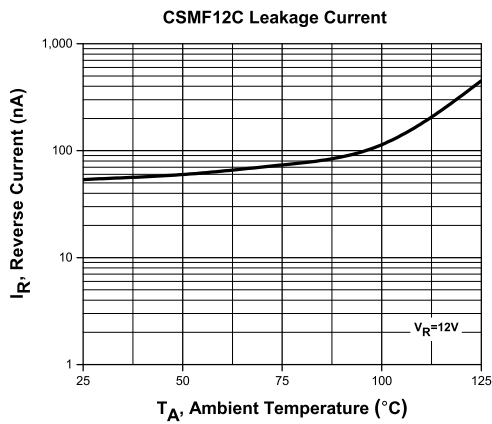
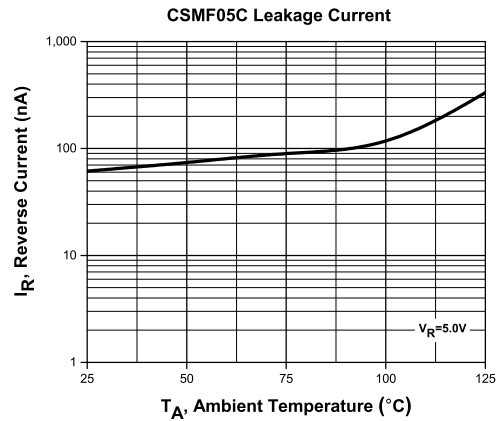
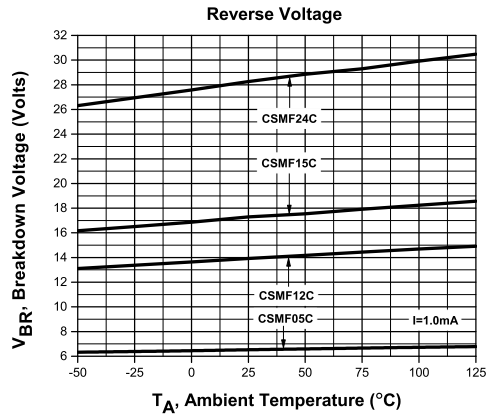
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## TYPICAL ELECTRICAL CHARACTERISTICS



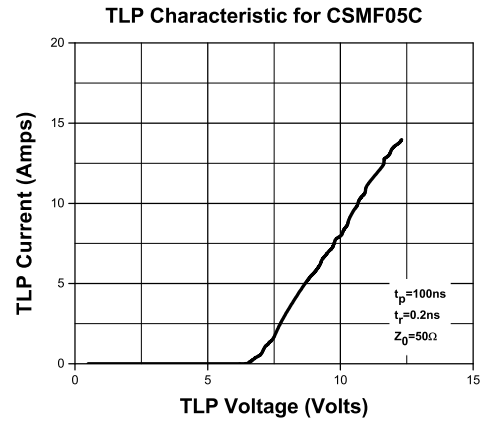
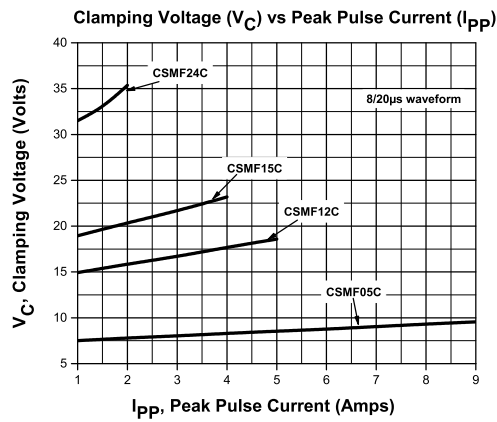
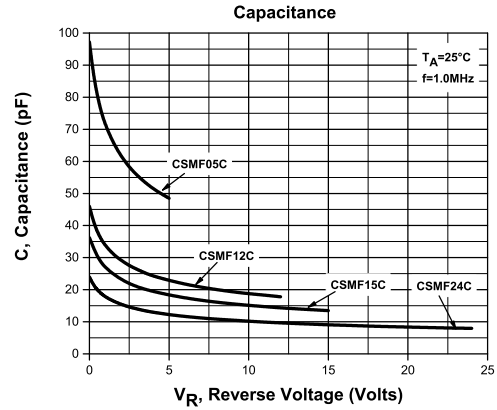
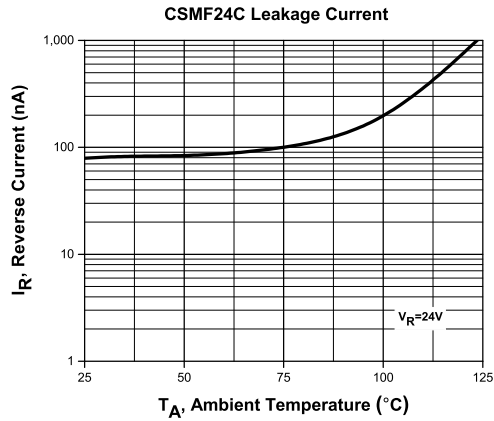
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## TYPICAL ELECTRICAL CHARACTERISTICS



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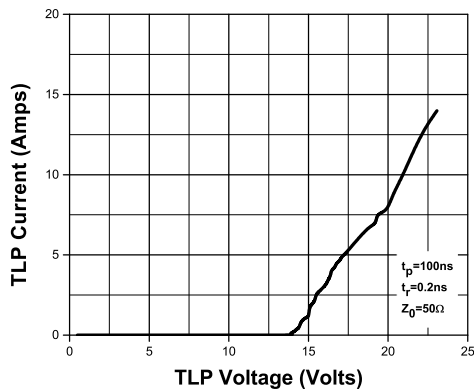
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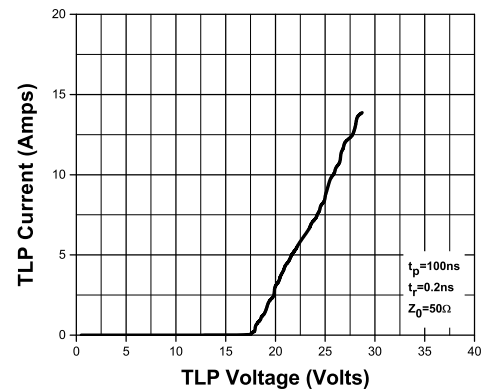


## TYPICAL ELECTRICAL CHARACTERISTICS

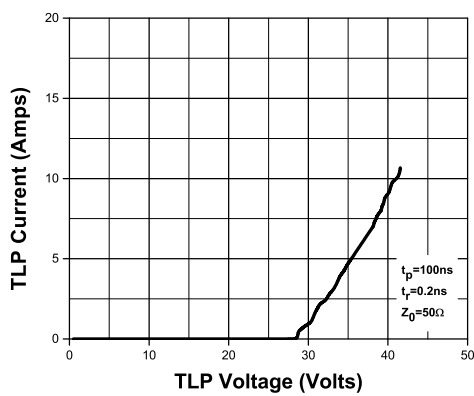
TLP Characteristic for CSMF12C



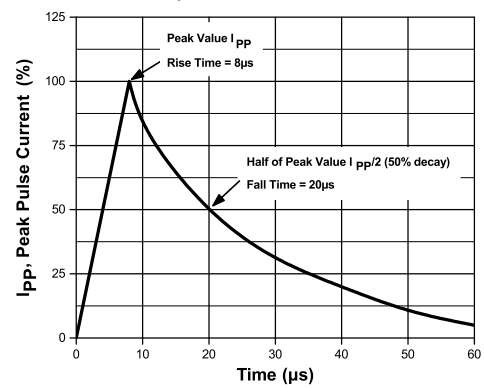
TLP Characteristic for CSMF15C



TLP Characteristic for CSMF24C



8x20 $\mu\text{s}$  Pulse Current Waveform



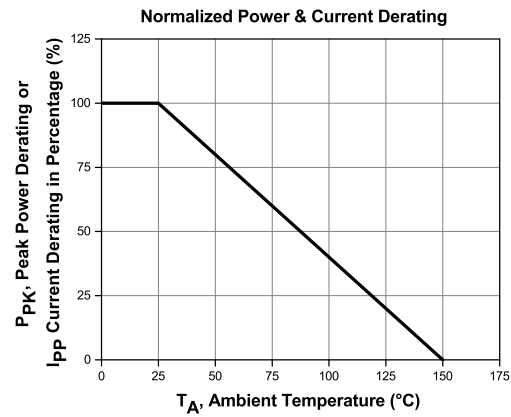
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R5 (9-November 2015)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### 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

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### DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2<sup>nd</sup> 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

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### 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).

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.  
145 Adams Avenue  
Hauppauge, NY 11788 USA  
Main Tel: (631) 435-1110  
Main Fax: (631) 435-1824  
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[www.centalsemi.com](http://www.centalsemi.com)

**Worldwide Field Representatives:**  
[www.centalsemi.com/wwreps](http://www.centalsemi.com/wwreps)

**Worldwide Distributors:**  
[www.centalsemi.com/wwdistributors](http://www.centalsemi.com/wwdistributors)

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For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: [www.centalsemi.com/terms](http://www.centalsemi.com/terms)



<http://www.centrasemi.com>

## Product End of Life Notification

PDN ID:	PDN01156
Notification Date:	6/11/20
Last Buy Date:	Stock Only
Last Shipment Date	Stock Only

Please be advised that Central Semiconductor must immediately discontinue the product(s) listed in the attached PDN notice. We are unable to accept any further orders for these products unless we have available inventory on hand.

You may have purchased one or more of the products listed. Please do not hesitate to contact your local Central Semiconductor sales representative with any questions or needs you may have. Central regrets any inconvenience this may cause.

Sincerely,

Central Semiconductor Corp.

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DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor Corp. will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.



<http://www.centrasemi.com>

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<b>Notification Date:</b>	6/11/20
<b>Last Buy Date:</b>	Stock Only
<b>Last Shipment Date</b>	Stock Only

Summary: The CSMF05C TVS/Zener Diode Series is discontinued and now classified as of Life (EOL).

Although Central Semiconductor Corp. makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Management Process. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

<b>Central Part Number</b>	<b>Replacement</b>
CSMF05C BK	N/A, Stock Only
CSMF05C TR	N/A, Stock Only
CSMF12C BK	N/A, Stock Only
CSMF12C TR	N/A, Stock Only
CSMF15C BK	N/A, Stock Only
CSMF15C TR	N/A, Stock Only
CSMF24C BK	N/A, Stock Only
CSMF24C TR	N/A, Stock Only

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. Please email your requests to [engineering@centrasemi.com](mailto:engineering@centrasemi.com).

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