

CMUT3904 NPN  
CMUT3906 PNP

**SURFACE MOUNT SILICON  
COMPLEMENTARY TRANSISTORS**



**SOT-523 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMUT3904 and CMUT3906 are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in an SOT-523 surface mount package, designed for small signal general purpose amplifier and switching applications.

**MARKING CODES: CMUT3904: AC1  
CMUT3906: AC2**

**MAXIMUM RATINGS: ( $T_A=25^\circ\text{C}$ )**

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

SYMBOL	CMUT3904	CMUT3906	UNITS
$V_{CBO}$	60	40	V
$V_{CEO}$	40	40	V
$V_{EBO}$	6.0	5.0	V
$I_C$	200		mA
$P_D$	250		mW
$T_J, T_{stg}$	-65 to +150		$^\circ\text{C}$
$\Theta_{JA}$	500		$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		UNITS
		MIN	MAX	MIN	MAX	
$I_{CEV}$	$V_{CE}=30\text{V}, V_{EB}=3.0\text{V}$	-	50	-	50	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	60	-	40	-	V
$BV_{CEO}$	$I_C=1.0\text{mA}$	40	-	40	-	V
$BV_{EBO}$	$I_E=10\mu\text{A}$	6.0	-	5.0	-	V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	-	0.20	-	0.25	V
$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.30	-	0.40	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	0.65	0.85	0.65	0.85	V
$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.95	-	0.95	V
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$	40	-	60	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$	70	-	80	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	100	300	100	300	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=50\text{mA}$	60	-	60	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	30	-	30	-	

CMUT3904 NPN  
CMUT3906 PNP

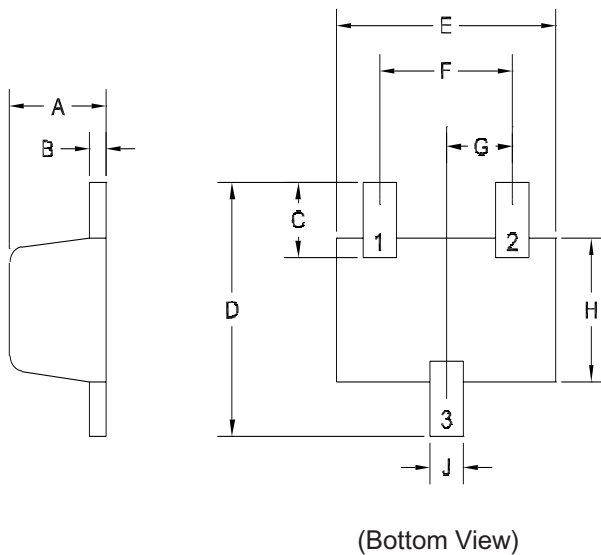
**SURFACE MOUNT SILICON  
COMPLEMENTARY TRANSISTORS**



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

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		UNITS
		MIN	MAX	MIN	MAX	
$f_T$	$V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	300	-	250	-	MHz
$C_{ob}$	$V_{CB}=5.0\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$	-	4.0	-	4.5	pF
$C_{ib}$	$V_{BE}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$	-	12	-	12	pF
$h_{ie}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	10	2.0	12	$k\Omega$
$h_{re}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	0.5	8.0	0.1	10	$\times 10^{-4}$
$h_{fe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	100	400	100	400	
$h_{oe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	40	3.0	60	$\mu\text{S}$
NF	$V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ , $R_S=1.0k\Omega$ $f=10\text{Hz}$ to $15.7\text{kHz}$	-	5.0	-	4.0	dB
$t_d$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$	-	35	-	35	ns
$t_r$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$	-	35	-	35	ns
$t_s$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$	-	170	-	170	ns
$t_f$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$	-	80	-	80	ns

**SOT-523 CASE - MECHANICAL OUTLINE**



DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.026	0.030	0.65	0.75
B	0.002	0.007	0.07	0.17
C	0.014	0.022	0.35	0.55
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020		0.50	
H	0.030	0.037	0.75	0.95
J	0.009	0.013	0.23	0.33

SOT-523(SC-89) (REV: R4)

**LEAD CODE:**

- 1) Base
- 2) Emitter
- 3) Collector

**MARKING CODES:**

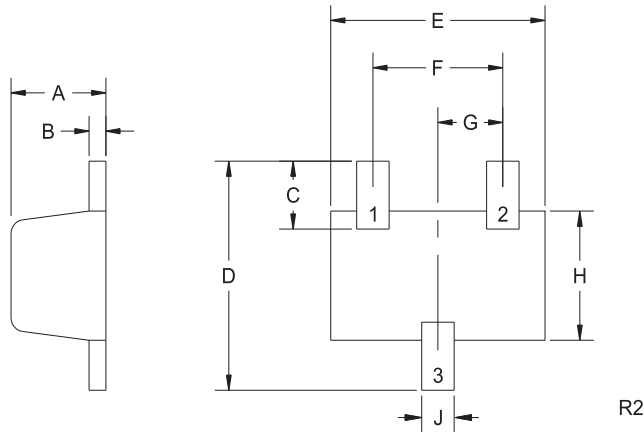
CMUT3904: AC1  
CMUT3906: AC2

**Package Details**  
SOT-523 Case



**Mechanical Drawing**

BOTTOM VIEW



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.023	0.031	0.58	0.78
B	0.002	0.008	0.04	0.20
C	0.013	0.021	0.34	0.54
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020		0.50	
H	0.031	0.039	0.78	0.98
J	0.010	0.014	0.25	0.35

SOT-523 (REV: R2)

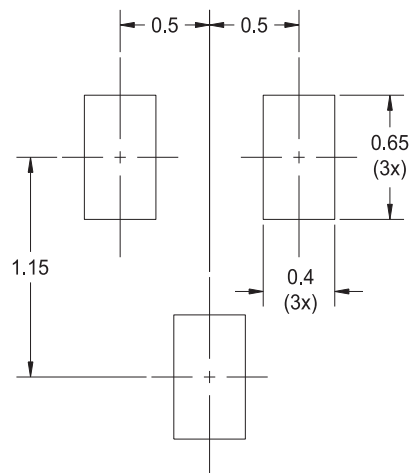
R2

**Lead Code:**

Reference individual device datasheet.

**Part Marking:** 2-3 Character Alpha/Numeric Code

**Mounting Pad Geometry** (Dimensions in mm)



R1

R3 (4-March 2010)

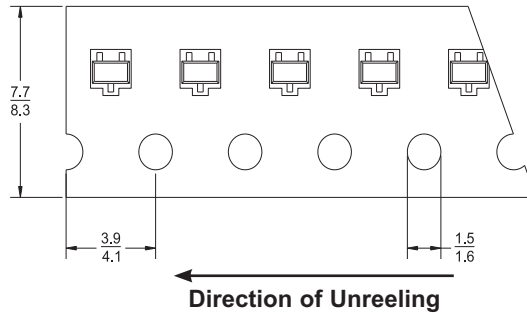
# Package Details

## SOT-523 Case



### Tape Dimensions and Orientation (Dimensions in mm)

Tape Width: 8mm



Devices are taped in accordance with Electronic Industries Association Standard EIA-481-1-A

### Packaging Base

7" Reel = 3,000 pcs.

### Reel Labeling Information

Each reel is labeled with the following information:

Central Part Number, Customer Part Number, Purchase Order Number, Quantity, Lot Number, Date Code, Ship Date and Marking Code.

### Reel Packing Information

Reel Size	Reels per Box (Maximum)	Parts per Box (Maximum)	Box Dimensions		Shipping Weight (Max.)	
			INCH	CM	LB	KG
7"	9	27,000	9x9x5	23x23x13	3	2
	18	54,000	9x9x9	23x23x23	6	3
	40	120,000	21x9x9	53x23x23	13	6
	108	324,000	27x9x17	69x23x43	34	16

### Ordering Information

- For devices taped and reeled on 7" reels, add TR suffix to part number.
- All SMDs are available in small quantities for prototype and manual placement applications.

R3 (4-March 2010)

# Material Composition Specification

## SOT-523 Case



Device average mass . . . . . **2.6 mg**  
 Fluctuation margin . . . . . **+/-10%**

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	2.73%	0.07	Si	7440-21-3	2.73%	0.071	27,250
bond wire	gold or copper	0.35%	0.01	Au	7440-57-5	0.35%	0.009	3,540
				Cu	7440-50-8			
leadframe	Cu alloy w/ Ni + Ag plating	35.29%	0.92	Cu	7440-50-8	30.75%	0.8	307,540
				Ni	7440-02-0	3.12%	0.081	31,240
				Sn	7440-31-5	0.82%	0.021	8,240
				Ag	7440-22-4	0.58%	0.015	5,840
encapsulation*	EMC	59.03%	1.54	silica	7631-86-9	42.56%	1.107	425,640
				epoxy resin	Proprietary	14.83%	0.386	148,310
				Sb <sub>2</sub> O <sub>3</sub>	1309-64-4	1.18%	0.031	11,800
				TBBA	79-94-7	0.3%	0.008	3,000
	EMC GREEN	59.03%	1.54	silica	7631-86-9	43.65%	1.136	436,587
				epoxy resin	Proprietary	15.21%	0.396	152,124
				carbon	1333-86-4	0.15%	0.004	1,539
plating**	tin/lead process	2.61%	0.07	Sn	7440-31-5	2.22%	0.058	22,185
				Pb	7439-92-1	0.39%	0.01	3,915
	matte tin	2.61%	0.07	Sn	7440-31-5	2.61%	0.068	26,100

\*EMC GREEN molding compound is Halogen-Free.

\*\*For Lead Free plating, add suffix "PB FREE" to part number.

For Tin/Lead plating, add suffix "TIN/LEAD" to part number.

No suffix designation allows for the supply of either lead-free or tin/lead plated product depending on availability.

**Disclaimer**

The information provided in this Material Composition data sheet is, to the best of our knowledge, correct. However, there is no guarantee to completeness or accuracy, as some information is derived from data sources outside the company.

R8 (16-July 2018)

# Material Composition Specification

## SOT-523 Case



Device average mass . . . . . **2.6 mg**  
 Fluctuation margin . . . . . **+/-10%**

Component	Material	Material		Substance	CAS No.	Substance		
		(%wt)	(mg)			(%wt)	(mg)	(ppm)
active device	doped Si	2.73%	0.07	Si	7440-21-3	2.73%	0.071	27,250
bond wire	gold or copper	0.35%	0.01	Au	7440-57-5	0.35%	0.009	3,540
				Cu	7440-50-8			
leadframe	Cu alloy w/ Ni + Ag plating	35.29%	0.92	Cu	7440-50-8	30.75%	0.8	307,540
				Ni	7440-02-0	3.12%	0.081	31,240
				Sn	7440-31-5	0.82%	0.021	8,240
				Ag	7440-22-4	0.58%	0.015	5,840
encapsulation*	EMC	59.03%	1.54	silica	7631-86-9	42.56%	1.107	425,640
				epoxy resin	Proprietary	14.83%	0.386	148,310
				Sb <sub>2</sub> O <sub>3</sub>	1309-64-4	1.18%	0.031	11,800
				TBBA	79-94-7	0.3%	0.008	3,000
	EMC GREEN	59.03%	1.54	silica	7631-86-9	43.65%	1.136	436,587
				epoxy resin	Proprietary	15.21%	0.396	152,124
				carbon	1333-86-4	0.15%	0.004	1,539
plating**	tin/lead process	2.61%	0.07	Sn	7440-31-5	2.22%	0.058	22,185
				Pb	7439-92-1	0.39%	0.01	3,915
	matte tin	2.61%	0.07	Sn	7440-31-5	2.61%	0.068	26,100

\*EMC GREEN molding compound is Halogen-Free.

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R8 (16-July 2018)

## 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  
Support Team Fax: (631) 435-3388  
[www.centrasemi.com](http://www.centrasemi.com)

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

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



# Product End of Life Notification

<b>PDN ID:</b>	PDN01276 Rev:001
<b>Notification Date:</b>	1/22/26
<b>Last Buy Date:</b>	Stock Only
<b>Last Shipment Date</b>	Stock Only

<https://www.centrasemi.com>

Please be advised that Central Semiconductor must immediately discontinue the product(s) listed in the attached PDN notice. Orders can only be accepted for products with 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, LLC

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DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor 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.



https://www.centalsemi.com

# Product End of Life Notification

<b>PDN ID:</b>	PDN01276 Rev:001
<b>Notification Date:</b>	1/22/26
<b>Last Buy Date:</b>	Stock Only
<b>Last Shipment Date</b>	Stock Only

Summary: All devices manufactured in the SOT-523 package are discontinued and classified as End of Life (EOL). Rev.001 of PDN#01276, January 22,2026 issued to remove several part numbers from this PDN and re-activate them in the system. See the details listed below in the PDN item section.  
Please contact Semiconductor Customer Service Representative at 001.631.435.1110

Although Central Semiconductor 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 Portfolio Management. 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.

**\* All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.**

<b>Central Part Number</b>	<b>Suggested Replacement</b>
CMUDM7004 BK	N/A
CMUDM7004 TR	N/A
CMUDM7005 BK	N/A
CMUDM7005 TR	N/A
CMUDM8004 BK	N/A
CMUDM8004 TR	N/A
CMUDM8005 BK	N/A
CMUDM8005 TR	N/A
CMUSH05-4 BK	N/A
CMUSH05-4 TR	N/A
CMUT2222A BK	N/A
CMUT2222A TR	N/A
CMUT2907A BK	N/A
CMUT2907A TR	N/A
CMUT3410 BK	N/A
CMUT3410 TR	N/A
CMUT4401 BK	N/A
CMUT4401 TR	N/A
CMUT4403 BK	N/A
CMUT4403 TR	N/A
CMUT5401 BK	N/A
CMUT5401 TR	N/A
CMUT5551 BK	N/A
CMUT5551 TR	N/A
CMUT7410 BK	N/A
CMUT7410 TR	N/A
BC846AT BK	Item BC846AT BK removed from PDN; device now active.
BC846AT TR	Item BC846AT TR removed from PDN; device now active.
BC846BT BK	Item BC846BT BK removed from PDN; device now active.
BC846BT TR	Item BC846BT TR removed from PDN; device now active.
BC847AT BK	Item BC847AT BK removed from PDN; device now active.
BC847AT TR	Item BC847AT TR removed from PDN; device now active.
BC847BT BK	Item BC847BT BK removed from PDN; device now active.

\*\*\* CONTINUED \*\*\*

DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor 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.



https://www.centalsemi.com

# Product End of Life Notification

PDN ID:	PDN01276 Rev:001
Notification Date:	1/22/26
Last Buy Date:	Stock Only
Last Shipment Date	Stock Only

\*\*\* CONTINUED FROM PRIOR PAGE \*\*\*

\* All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.

Central Part Number	Suggested Replacement
BC847BT TR	Item BC847BT TR removed from PDN; device now active.
BC847CT BK	Item BC847CT BK removed from PDN; device now active.
BC847CT TR	Item BC847CT TR removed from PDN; device now active.
BC856AT BK	Item BC856AT BK removed from PDN; device now active.
BC856AT TR	Item BC856AT TR removed from PDN; device now active.
BC856BT BK	Item BC856BT BK removed from PDN; device now active.
BC856BT TR	Item BC856BT TR removed from PDN; device now active.
BC857AT BK	Item BC857AT BK removed from PDN; device now active.
BC857AT TR	Item BC857AT TR removed from PDN; device now active.
BC857BT BK	Item BC857BT BK removed from PDN; device now active.
BC857BT TR	Item BC857BT TR removed from PDN; device now active.
BC857CT BK	Item BC857CT BK removed from PDN; device now active.
BC857CT TR	Item BC857CT TR removed from PDN; device now active.
CMUDM7001 BK	Item CMUDM7001 BK removed from PDN; device now active.
CMUDM7001 TR	Item CMUDM7001 TR removed from PDN; device now active.
CMUDM8001 BK	Item CMUDM8001 BK removed from PDN; device now active.
CMUDM8001 TR	Item CMUDM8001 TR removed from PDN; device now active.
CMUD2838 BK	Item CMUD2838 BK removed from PDN; device now active.
CMUD2838 TR	Item CMUD2838 TR removed from PDN; device now active.
CMUD4448 BK	Item CMUD4448 BK removed from PDN; device now active.
CMUD4448 TR	Item CMUD4448 TR removed from PDN; device now active.
CMUD6263AE BK	Item CMUD6263AE BK removed from PDN; device now active.
CMUD6263AE TR	Item CMUD6263AE TR removed from PDN; device now active.
CMUD6263CE BK	Item CMUD6263CE BK removed from PDN; device now active.
CMUD6263CE TR	Item CMUD6263CE TR removed from PDN; device now active.
CMUD6263E BK	Item CMUD6263E BK removed from PDN; device now active.
CMUD6263E TR	Item CMUD6263E TR removed from PDN; device now active.
CMUD6263SE BK	Item CMUD6263SE BK removed from PDN; device now active.
CMUD6263SE TR	Item CMUD6263SE TR removed from PDN; device now active.
CMUT3904 BK	Item CMUT3904 BK removed from PDN; device now active.
CMUT3904 TR	Item CMUT3904 TR removed from PDN; device now active.
CMUT3906 BK	Item CMUT3906 BK removed from PDN; device now active.
CMUT3906 TR	Item CMUT3906 TR removed from PDN; device now active.
CMUT5087E BK	Item CMUT5087E BK removed from PDN; device now active.
CMUT5087E TR	Item CMUT5087E TR removed from PDN; device now active.
CMUT5088E BK	Item CMUT5088E BK removed from PDN; device now active.
CMUT5088E TR	Item CMUT5088E TR removed from PDN; device now active.
CMUT5179 BK	Item CMUT5179 BK removed from PDN; device now active.
CMUT5179 TR	Item CMUT5179 TR removed from PDN; device now active.

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. If you would like assistance, please visit <https://my.centalsemi.com/submit-inquiry?type=ER> to submit an online inquiry.

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