



Series 228C

7.2 x 6.8mm Illuminated Tactile Switch

- Surface mount gull-wing terminal and standard through hole configurations
- Compatible with IR reflow, and manual soldering
- Single, Bi-color or Tri-color display during illumination
- Variety of LED color options
- Variety of cap styles, colors, and laser etching options



Ordering Information

Series	Terminal Type	Actuating Direction	Actuation Force	LED Color	LED Type	Cap Style	Cap Color	Laser Etching	Packaging																																
228C	M	V	A	R	F	A	MS	A	R																																
<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>D</td><td>Standard through hole (white actuator)</td></tr><tr><td>M</td><td>Surface mount gull wing (black actuator)</td></tr></table>		Code	Spec.	D	Standard through hole (white actuator)	M	Surface mount gull wing (black actuator)	<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>V</td><td>Vertical</td></tr></table>		Code	Spec.	V	Vertical	<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>A</td><td>160 gf</td></tr></table>		Code	Spec.	A	160 gf	<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>F</td><td>Flat</td></tr></table>		Code	Spec.	F	Flat	Blank – No Etching (only available on Natural color caps) See table on page.2															
Code	Spec.																																								
D	Standard through hole (white actuator)																																								
M	Surface mount gull wing (black actuator)																																								
Code	Spec.																																								
V	Vertical																																								
Code	Spec.																																								
A	160 gf																																								
Code	Spec.																																								
F	Flat																																								
				Blank – No Cap See table on pages 2 - 3		Blank – No Cap See table on page 2																																			
				<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>R</td><td>Red</td></tr><tr><td>Y</td><td>Yellow</td></tr><tr><td>G</td><td>Green</td></tr><tr><td>B</td><td>Blue</td></tr><tr><td>W</td><td>White</td></tr><tr><td>A</td><td>Amber</td></tr><tr><td>RG</td><td>Red & Green</td></tr><tr><td>RB</td><td>Red & Blue</td></tr><tr><td>YG</td><td>Yellow & Green</td></tr><tr><td>RA</td><td>Red & Amber</td></tr><tr><td>AW</td><td>Amber & White</td></tr><tr><td>RGB</td><td>Red, Green & Blue</td></tr></table>		Code	Spec.	R	Red	Y	Yellow	G	Green	B	Blue	W	White	A	Amber	RG	Red & Green	RB	Red & Blue	YG	Yellow & Green	RA	Red & Amber	AW	Amber & White	RGB	Red, Green & Blue	Note: Caps supplied in bulk for surface mount terminal constructions and must be installed after IR reflow soldering.		<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>R</td><td>Tape & reel packaging (only available for surface mount type)</td></tr><tr><td>Blank</td><td>Tray packaging (only available for standard through hole type)</td></tr></table>		Code	Spec.	R	Tape & reel packaging (only available for surface mount type)	Blank	Tray packaging (only available for standard through hole type)
Code	Spec.																																								
R	Red																																								
Y	Yellow																																								
G	Green																																								
B	Blue																																								
W	White																																								
A	Amber																																								
RG	Red & Green																																								
RB	Red & Blue																																								
YG	Yellow & Green																																								
RA	Red & Amber																																								
AW	Amber & White																																								
RGB	Red, Green & Blue																																								
Code	Spec.																																								
R	Tape & reel packaging (only available for surface mount type)																																								
Blank	Tray packaging (only available for standard through hole type)																																								

Cap Style

Code	Spec.
A	Round (Dia 7.3mm)
B	Elliptical column on round
C	Cylinder on square
D	Cylinder
E	Cylinder on round
F	Joystick button on square

Cap Etching

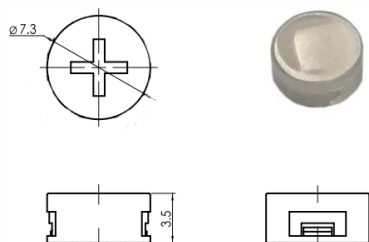
Code	Style
A	
B	
C	
D	OK

Cap Color

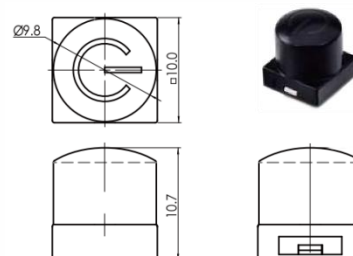
Code	Spec.
MS	Misty Silver
W	White
BB	Bright Black
R	Red
MB	Misty Black
A	Orange
N	Natural

Cap Style Details

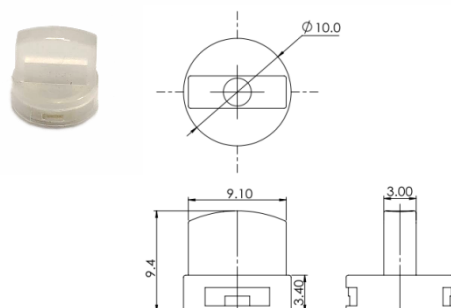
Style A: Round (Dia.7.3mm)



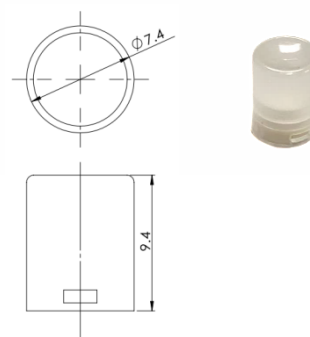
Style C: Cylinder on square



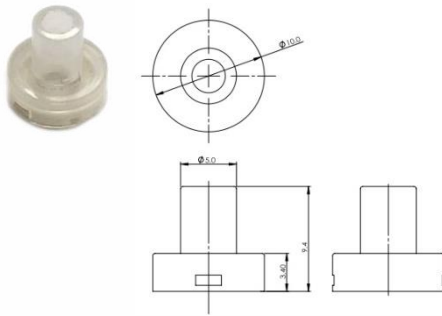
Style B: Elliptical column on round



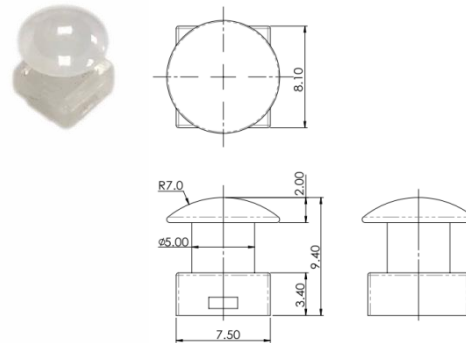
Style D: Cylinder



Style E: Cylinder on round



Style F: Joystick button on square



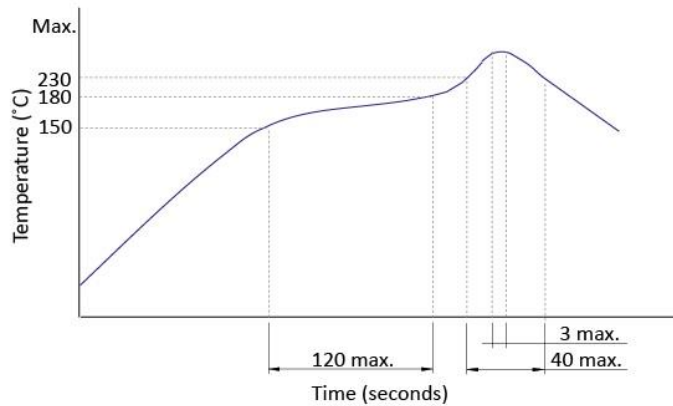
Electrical Specifications

Parameter	Conditions & Remarks	Min	Max	Unit
Contact Resistance			100	milliohms
Insulation Resistance	Between insulated terminals	100		megohms
Dielectric Strength	1 minute between adjacent switches		250	VAC
Non-switching Rating			50 or 12	mA or VDC

Mechanical and Environmental

Soldering	Maximum reflow temperature, 260°C for 5 seconds Maximum manual temperature, 350°C for 3 seconds
RoHS	Lead-Free. Fully compliant to RoHS Directive 2011/65/EU and 2015/863/EU
Operating Force	160±50 gf
Actuation Life	100,000 cycles
Actuator Strength	2 Kgf maximum
Travel	0.25±0.1mm
Packaging	Standard tape and reel packaging for surface mount gull wing terminal Tray packaging for standard through hole
Operating Temperature Range	-25°C to +70°C
Storage Temperature Range	-30°C to +80°C
MSL Level	1 for through hole product 3 for SMD product

Soldering Profile



LED Specifications

Color	Reversed Voltage	Forward Current	Recommended Operating Current	Forward Voltage	
				Nor	Max
Red	5 Vdc	20 mA	20 mA	1.7V	2.4V
Green	5 Vdc	20 mA	20 mA	1.9V	2.4V
Yellow	5 Vdc	20 mA	20 mA	1.9V	2.4V
Blue	5 Vdc	20 mA	20 mA	3.0V	3.6V
White	5 Vdc	20 mA	20 mA	3.0V	3.6V

Mechanical Specifications

Figure 1 – 228CDV, Standard Though Hole, Vertical Actuation

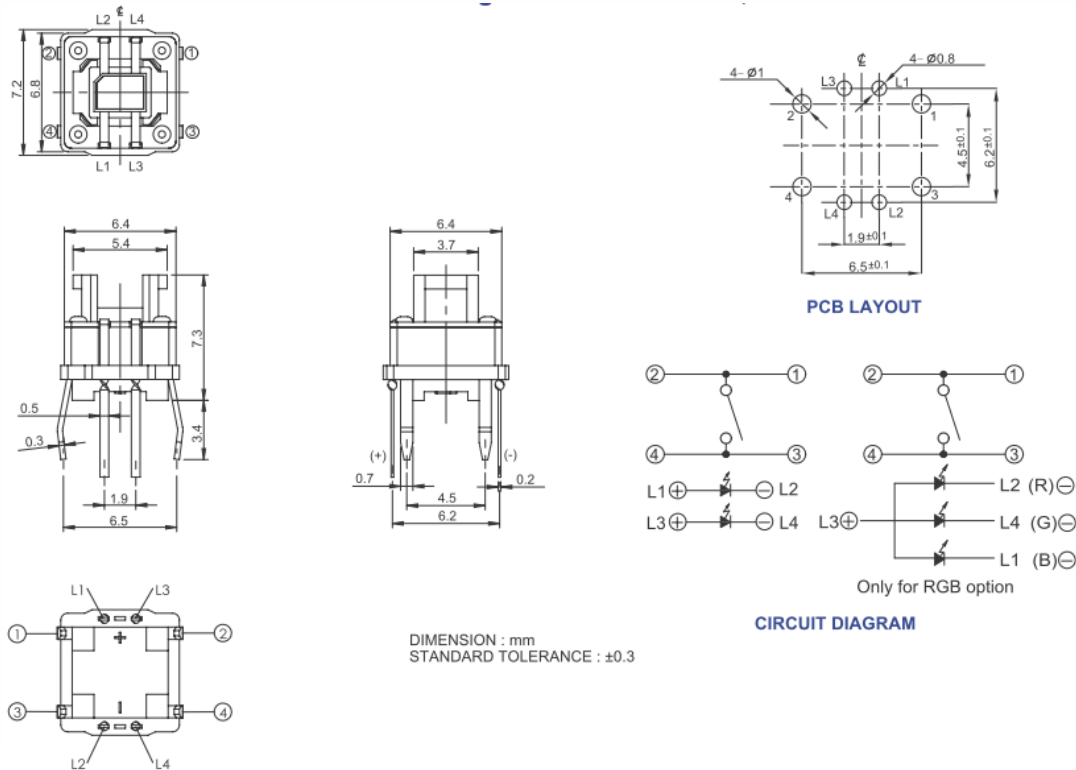


Figure 2 – 228CMV, Surface Mount Gull Wing, Vertical Actuation

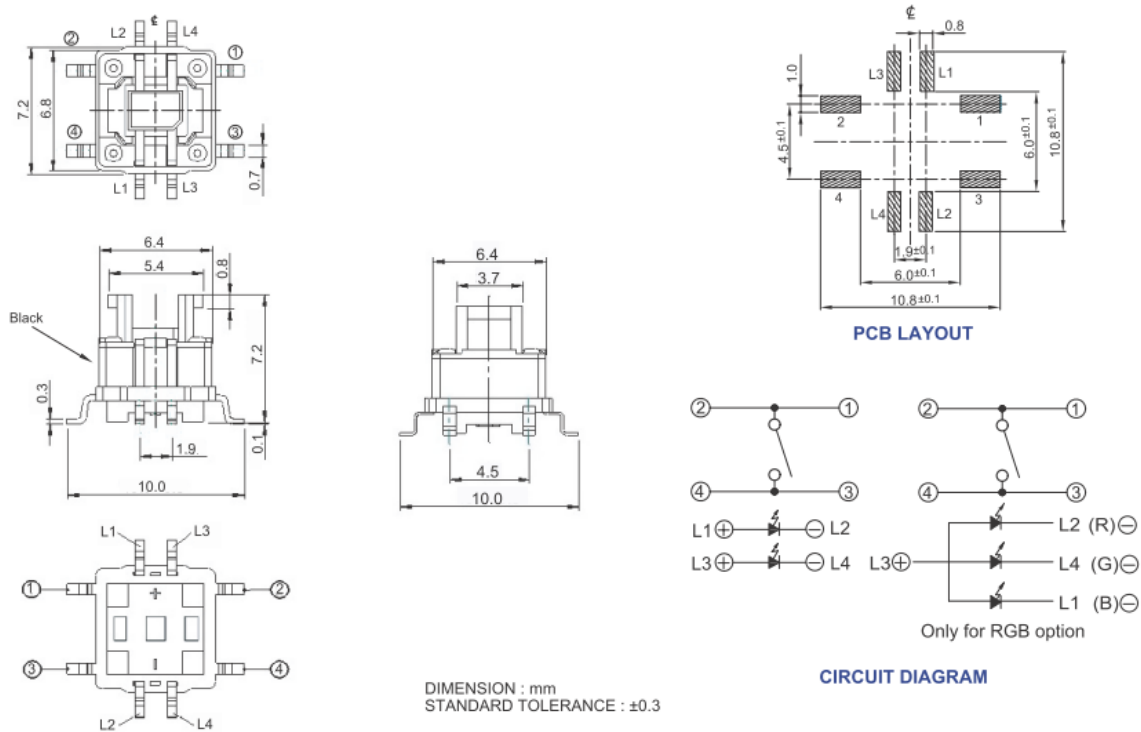


Figure 3 – 228CDV...F..., Standard Though Hole, Vertical Actuation, Joystick Button on Square

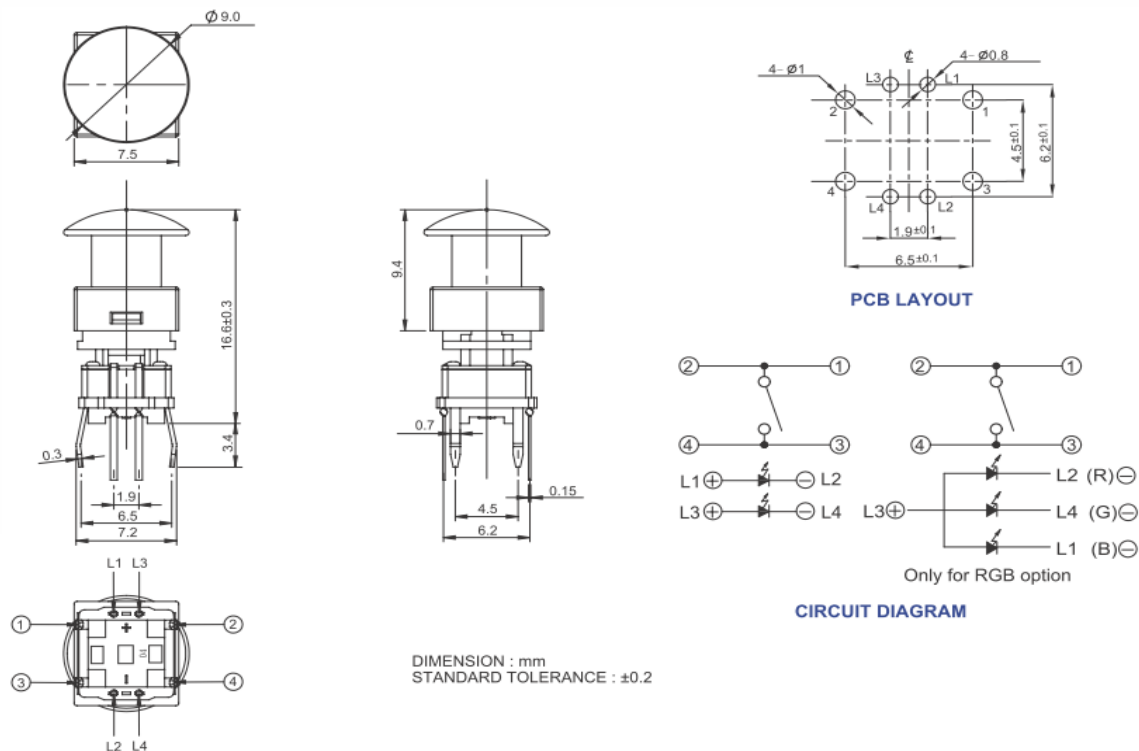
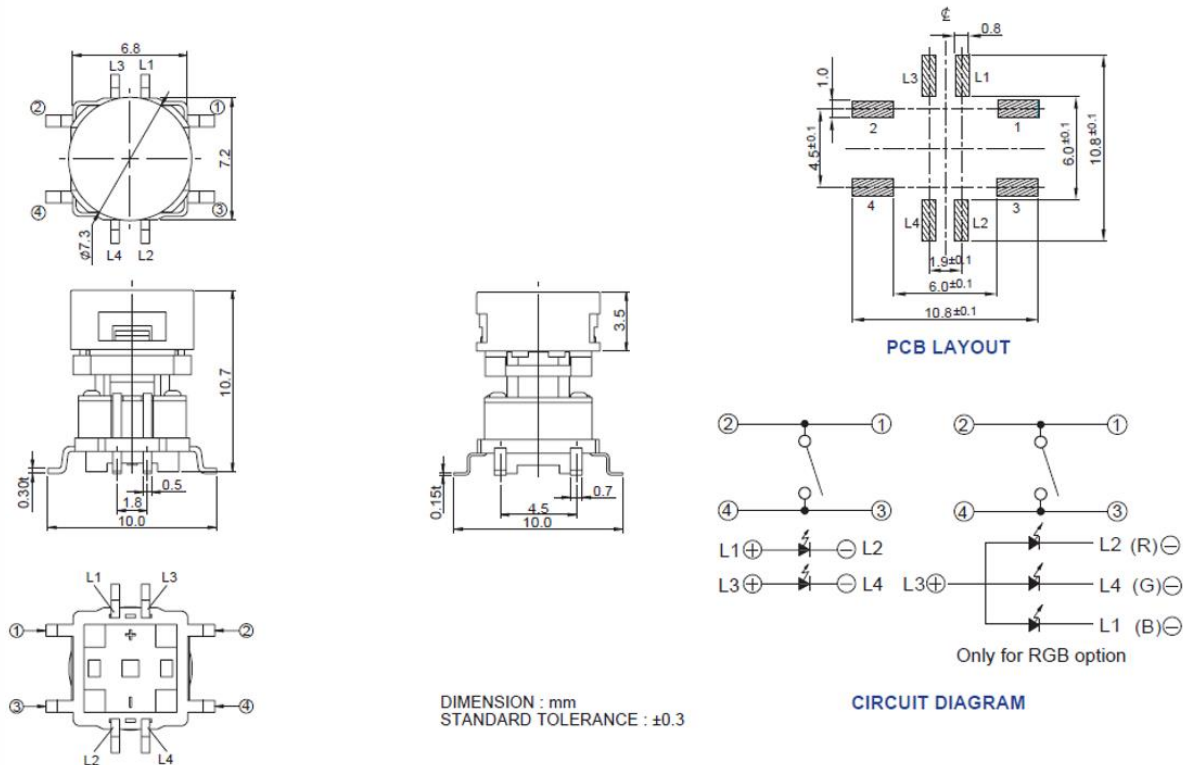


Figure 4 - 228CMV...A..., Surface Mount Gull Wing, Vertical Actuation, Round

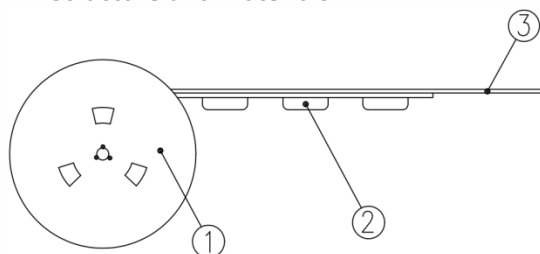


Packing: Tape and Reel

Surface Mount Gull Wing, Actuator Height 7.0mm

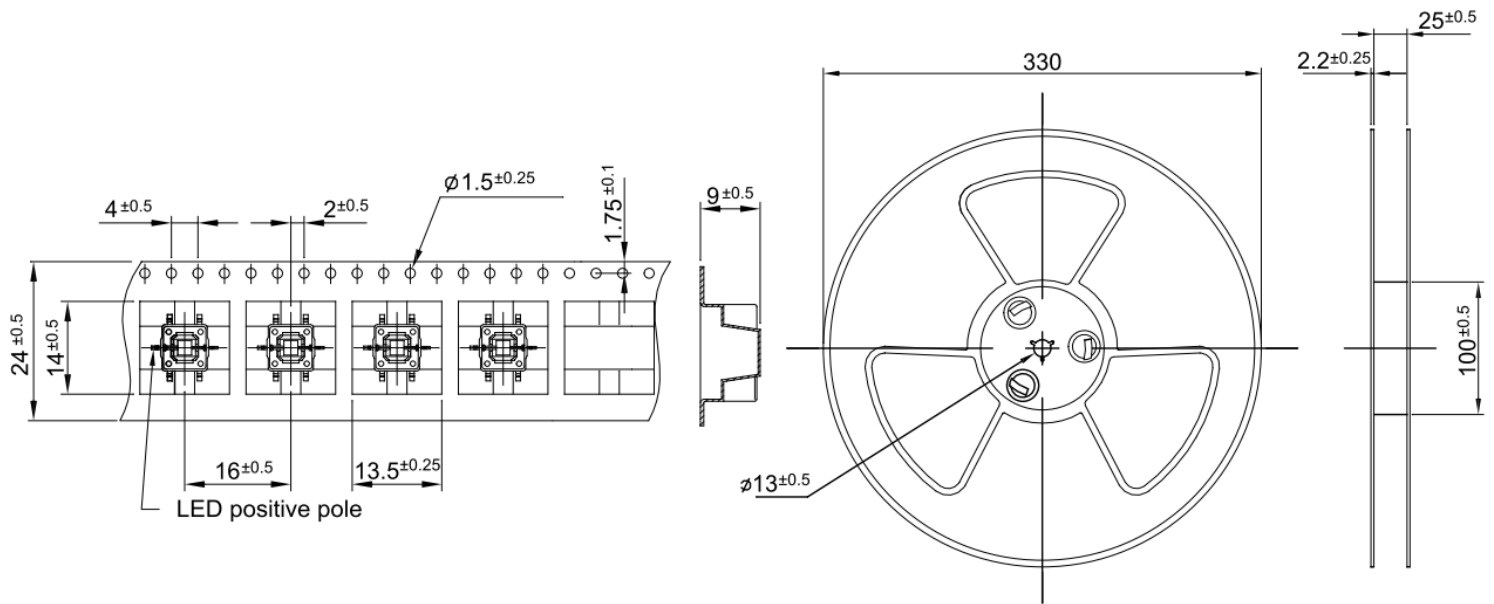
The packing specifications:

1. Structure and materials:



No	PART NAME	MATERIAL
①	REEL	POLYSTYRENE
②	CARRIER TAPE	POLYSTYRENE
③	COVER TAPE	POLYESTER

2. Packing quantity: 450 pcs/reel
3. More than 15 empty pockets should remain at each end of the carrier tape for each reel.
4. Shortage of less than 10 pcs a reel is acceptable but no more than 3 consecutive empty pockets are allowed.
5. Stripping strength of cover tape is between 10 gf to 130 gf and stripping angle should be within 165°~180°.
6. The product in the pocket of carrier tape should be placed in a specified correct position.
7. Tape and reel per EIA-481.
8. Dimensions:



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[CTS:](#)

[228CMVARGBFR](#) [228CDVARGFABBB](#) [228CMVAYGFFACR](#) [228CMVAYGFFRBR](#) [228CDVARGFCRA](#)
[228CDVARGFEMBA](#) [228CDVARGFEMBB](#) [228CDVARGFFMBD](#) [228CDVAWFaab](#) [228CDVAWFARD](#)
[228CDVAWFCDR](#) [228CDVAWFDMSD](#) [228CDVAWFFMSA](#) [228CDVAYFARC](#) [228CDVAYFARD](#) [228CDVAYFCWB](#)
[228CDVAYFDRD](#) [228CDVAYFFAA](#) [228CDVAYGFBAC](#) [228CDVAYGFCMBA](#) [228CDVAYGFDWD](#)
[228CDVAYGFFRC](#) [228CMVAAFAMBCR](#) [228CMVAAFDBBDR](#) [228CMVAAFDWR](#) [228CMVAAFEABR](#)
[228CMVAAFEBBAR](#) [228CMVAAFFBBCR](#) [228CMVAAFFWBR](#) [228CMVABFAMSAR](#) [228CMVABFBMSCR](#)
[228CMVABFCMSBR](#) [228CMVABFEMBAR](#) [228CMVABFEMSAR](#) [228CDVARFAMSC](#) [228CDVARFAWC](#)
[228CDVARFBMSC](#) [228CDVARFCBBD](#) [228CDVARFEWA](#) [228CDVARFFMSC](#) [228CDVARGBFAWC](#)
[228CDVARGBFDAD](#) [228CDVARGBFDWA](#) [228CDVARGBFFBBA](#) [228CDVARGBFFMBD](#) [228CDVARGFDMSD](#)
[228CDVARGFEN](#) [228CDVARGFFMSB](#) [228CDVAWFFWD](#) [228CDVAYFAMBA](#) [228CDVAYFAMBC](#)
[228CDVAYFBBBC](#) [228CDVAYFCMBC](#) [228CDVAYGFAMBC](#) [228CDVAYGFAMSA](#) [228CDVAYGFDBBA](#)
[228CDVAYGFDN](#) [228CDVAYGFDRB](#) [228CDVAYGFFWA](#) [228CDVAYGFFWC](#) [228CMVAAFAWCR](#)
[228CMVAAFCNR](#) [228CMVAAFCWCR](#) [228CMVAAFDMSAR](#) [228CDVAWFCRA](#) [228CDVAWFCWD](#)
[228CDVAWFFRA](#) [228CDVAYFARA](#) [228CDVAYFCAB](#) [228CDVAYFCRC](#) [228CDVAYFDWB](#) [228CDVAYFEMSB](#)
[228CMVABFARCR](#) [228CMVABFBBBCR](#) [228CMVABFDABR](#) [228CMVABFDBBAR](#) [228CMVABFEMSBR](#)
[228CMVABFERAR](#) [228CMVABFFBBBR](#) [228CMVABFFMSCR](#) [228CMVAGFAADR](#) [228CMVAGFAWAR](#)
[228CMVAGFCADR](#) [228CMVAGFCBBBR](#) [228CMVAGFCMSCR](#) [228CMVAGFCWCR](#) [228CMVAGFDNR](#)
[228CMVAGFDRBR](#) [228CMVARBFABBBR](#) [228CMVARBFCAAR](#) [228CMVARBFEMSAR](#) [228CMVARBFFACR](#)
[228CMVARBFFMBBR](#) [228CMVARFBMBCR](#) [228CMVARFCMSBR](#) [228CMVARFDWDR](#) [228CMVARFFBBCR](#)
[228CMVARFFMBDR](#) [228CMVARFFWBR](#) [228CMVARGBFBWCR](#)