RoHS Compatible

	HIGH TEMPERATURE VERSIONS		
	SILVER	GOLD	NC/NO
ELECTRICAL SPECIFICATIONS			
Contact resistance	<30m Ω - typ. 10m Ω		
Insulation resistance	>10M Ω		
Recommended load	0.5-50mA 24VDC	0.5µ-50mA 24VDC	
Contact bounce	<2mS - typically 0.5mS		
MECHANICAL SPECIFICATIONS			
Standard actuation force (switch)	2.0N, 3.5N, 6.5 N		3.5N
Max. Actuation force without cap	115N for 60 sec (according to MIL-PRF-22885H)		100N for 10 sec
Key travel (switch)	1 mm		
Life time (switch)	>10,000,000 cycles		>1,000,000 cycles
TEMPERATURE RANGE			
Working temperature	Min -40°C Max +160°C		
Storage temperature	Min -40°C Max +160°C		
5G with LED (working & storage temp)	Min -30°C Max +85°C		
Soldering (through-hole switch)	IEC 60068-2-20 8:		
	Infrared, vapour phase, wave - max 240°C for		
	max 40 sec or max 260°C for max 30 sec.		
	Soldering iron - max 350°C for max 3 sec.		
	Flux tight.		
SOLDERING (SMD)	JEDEC J-STD-020E		
ENVIRONMETAL ENDURANCE IEC 68-2-3			
Temperature	+40°C		
Humidity	93% RH		
Duration	56 Days		
TEMPERATURE CYCLING IEC 68-2-14			
Temperature limit	Min -55°C - Max +85°C		
Number of cycles	200		
Exposure time at each temperature	10 min		
Recovery time before measurements	16 hrs		
Sealing IEC 529	IP-67		
Cleaning	Standard methods - see usage guidelines		
MATERIAL SPECIFICATIONS - SWITCHES			
Housing	PPS UL94V0		
Actuator	PPS UL94V0		
Sealing + spring	Silicone rubber		
Contact spring	Stainless steel	Stainless steel	
	+ 3µAg	+ 1µAu	
Fixed contacts	SnCu + 2µNI + 3µAg	SnCu + 2µNI + 1µAu	
Terminals	SnCu + 2µNI + 3µSn100		

Caps, Bezels & Legends – Material Specifications

MATERIAL	PARTS	TEMP. LIMIT	UL RATING
ABS	1A, 1B, 1C, 1DS, 1ES, 1FS, 1H, 1JS, 1KS, 1LS, 1M, 1NS, 1PS, 1QS, 1RS, 1TS, 1US, 1VS, 1WAS, 1WDS, 1WPS, 1XS, 1Z, 1ZA, 1ZB, 1ZCS, 1ZW, 2C, 2D, 2K, reflectors for 1KBS/1KCS and 1YS	Max. 65°C	UL94HB
Polycarbonate	All lenses and transparent colour caps, lids for 1KBS/1KCS	Max. 85°C	UL94HB
Polyamide	1GAS/1GCS, 1SS, 2SS	Max. 160°C	UL94V2
Legends Adhesion	DS/EN ISO 2409 Class 1 & ASTM D3359 Class 4B		

RoHS Compatible

	HIGH TEMPERATURE VERSIONS	
	SILVER	GOLD
ELECTRICAL SPECIFICATIONS		
Contact resistance	<30m Ω - typ. 10m Ω	
Insulation resistance	>10M Ω	
Recommended load	0.5-50mA 24VDC	0.5µ-50mA 24VDC
Contact bounce	<2mS - typically 0.5mS	
MECHANICAL SPECIFICATIONS		
Standard actuation force (switch)	3.5N typ	
Max. Actuation force without cap	100N for 10 sec	
Key travel (switch)	1 mm	
Life time (switch)	>10,000,000	
Temperature Range		
Working temperature	Min -40°C Max +160°C	
Storage temperature	Min -40°C Max +160°C	
Soldering IEC 60068-2-20 8 :	Infrared, vapour phase, wave - max 240°C for max 40 sec or max 260°C for max 30 sec. Soldering iron - max 350°C for max 3 sec. Flux tight.	
ENVIRONMETAL ENDURANCE IEC 68-2-3		
Temperature	+40°C	
Humidity	93% RH	
Duration	56 Days	
TEMPERATURE CYCLING IEC 68-2-14		
Temperature limit	Min -55°C - Max +85°C	
Number of cycles	200	
Exposure time at each temperature	10 min	
Recovery time before measurements	16 hrs	
Sealing IEC 529	IP-67	
Cleaning	Standard methods - see usage guidelines	
MATERIAL SPECIFICATIONS - SWITCHES		
Housing	PPS UL94V0	
Actuator	PPS UL94V0	
Sealing + spring	Silicone rubber	
Contact spring	Stainless steel	Stainless steel
	+ 3µAg	+ 1µAu
Fixed contacts	SnCu + 2µNI + 3µAg	SnCu + 2µNI + 1µAu
Terminals	SnCu + 2µNI + 3µSn100	

Caps – Material Specifications

MATERIAL	PARTS	TEMP. LIMIT	UL RATING
Polyamide	Actuators for varimec™	Max 160°C	UL94V2

LEDs specifications

5G switches

Colour		Blue	Green	Yellow	White	Red	High Intensity Green
Colour Codes		02	22	42	61	82	29
ABSOLUTE MAXIMUM RATINGS (Ta=25°C)							
Power	mW	95	75	60	48	65	102.5
Current forward	mA	25	30	25	15	25	25
Forward peak current	mA	100	80	60	100	100	150
Voltage reverse	V	5	5	5	NA	12	5
Operating temperature	°C	-40/+85	-55/+85	-40/+85	-40/+85	-30/+85	-40/+85
Storage temperature	°C	-40/+90	-55/+85	-40/+90	-40/+85	-40/+85	-40/+85
Soldering temperature	°C	245 for max. 10 sec					
ELECTRICAL-OPTICAL CHARACTERISTICS (Ta=25°C)							
Voltage forward	Typ. V	3.3	2	1.75**	2.85	2	3.3
	Max. V	3.7	2.4	2.35	3.1	2.5	4.1
Current reverse (VR=5V)	Max. µA	50	100	10	NA	100	50
Wave length	nm	470	571	591	NA	633	525
Spread	Δnm	25	NA	15	NA	16	30
Spread angle	degree	120	130	120	150	160	60
Luminous Intensity	Min. mcd	45	18	28.5	71	28	500
	Typ. mcd	112*	35	72*	224*	180*	1000
Optical intensity	Lm/w	NA	NA	NA	36	7	NA

*Max.mcd **Min. V

3F switches

		3FXXX (for 1E-1F-1N-1Q-1R-1S-1X)								3FXXX (for 1K-1T-1U-1V-1W-1WD)		
Colour		**B**	**G**	**Y**	**W**	**R**	**G/Y**	**R/G**	**R/Y**	**G**	**Y**	**R**
Colour Codes		00	20	40	65	80	2040	8020	8040	24	46	87
Absolute Maximum Ratings	(Ta=25°C)											
Power	mW	105	70	60	120	60	120	100	120	60	60	120
Current forward	mA	30	20	20	25	20	25	30	25	25	25	50
Forward peak current	mA	150	60**	60**	100	60**	150	120	150	60	60	200
Voltage reverse	V	5	3	3	5	3	5	5	5	5	5	5
Operating temperature	°C	-40/+85			-40/+85	-25/+85	-40/+85	-55/+100	-40/+85	-40/+85	-40/+85	-40/+85
Storage temperature	°C	-40/+85			-40/+100	-30/+100	-40/+85	-55/+100	-40/+85	-40/+85	-40/+100	-40/+100
Soldering temperature	°C	260 for max 5 sec					260 for max 2 sec			300 for max 3 sec	260 for max 5 sec	
Electrical-Optical Characteristics (Ta=25°C)												
Voltage forward	Typ. V	3.8	2.1	2.1	3.8	2.0	2.1	2.0	2.1	2.0*	2.0	2.0***
	Max. V	4.5	3.0	3.0	4.3	3.0	2.8	2.6	2.8	2.4*	2.4	2.4***
Current reverse (VR=5V)	µA	10	10	10	50	10	2	2	2	10	10	10
Wave length	nm	466	563	585	NA	650	565/590	630/565	625/590	570	589	624/632
Spread	Δnm	60	40	40	NA	40	35	35	35	10	NA	20
Spread angle	degree	60	45	45	25	45	60	200	60	100	40	40
Luminous Intensity	Min. mcd	18	9.0	5.6	630	5.6	8	2.2	8	70****	630	400****
	Typ. mcd	50	25	16	1000	16	25	4.8	25	20****	1250	800****
Orientation	The longer pin is the anode, the shorter is the cathode. For bicolour LEDs the anode for the first colour (ex. 2080) is the longer pin.											

Pulse width 1ms Duty cycle 1:5, */F =50mA, **** Luminous Flux mlm
B=Blue, G=Green, Y=Yellow, R=Red, W=White
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