

# CMSQ03CN02A08K-HF

**N-Channel**  
**RoHS Device**  
**Halogen Free**



## Features

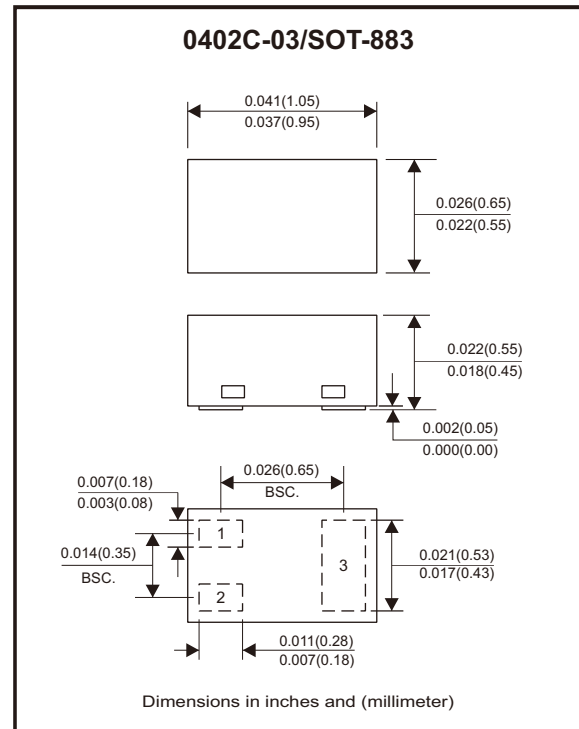
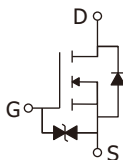
- Surface mount package.
- Reliable and rugged.
- ESD protection.

## Mechanical data

- Case: 0402C-03/SOT-883 package, molded plastic.
- Mounting position: Any.

## Circuit Diagram

- 1 : Gate
- 2 : Source
- 3 : Drain



## Maximum Ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	20	V
Gate-source voltage	$V_{GS}$	$\pm 8$	V
Continuous drain current	$I_D$	800	mA
Power dissipation	$P_D$	380	mW
Thermal resistance, junction to ambient @ $T_A=25^\circ\text{C}$	$R_{\theta JA}$	291	$^\circ\text{C/W}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

## Electrical Characteristics (at T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 16V, V <sub>GS</sub> = 0V			0.8	μA
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±8V, V <sub>DS</sub> = 0V			±10	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.4		1.1	V
Drain source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 500mA		220	400	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 500mA		260	500	
Drain forward voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 500mA	0.4		1.4	V
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz		42		pF
Output capacitance	C <sub>oss</sub>			9		
Reverse transfer capacitance	C <sub>rss</sub>			6		

## Typical Rating and Characteristic Curves (CMSQ03CN02A08K-HF)

Fig.1 - On-Region Characteristics

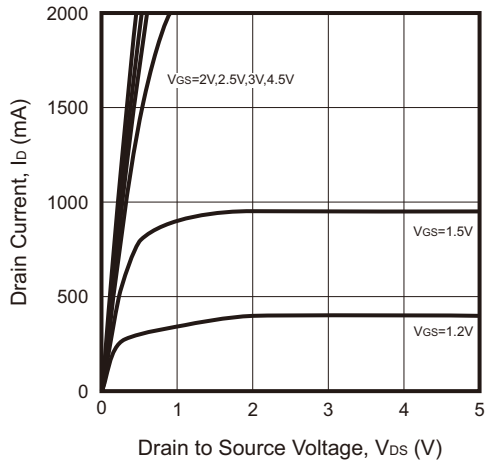


Fig.2 - Transfer Characteristics

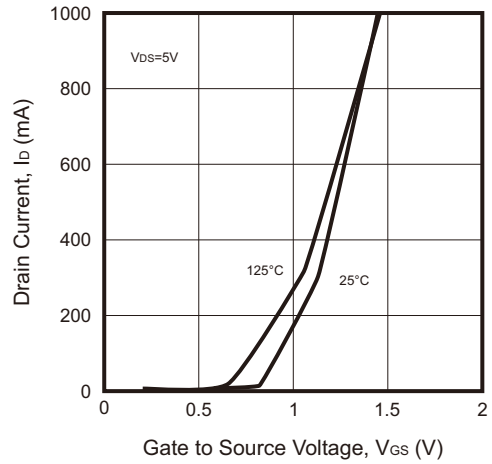


Fig.3 - On-Resistance vs. Drain Current Gate Voltage

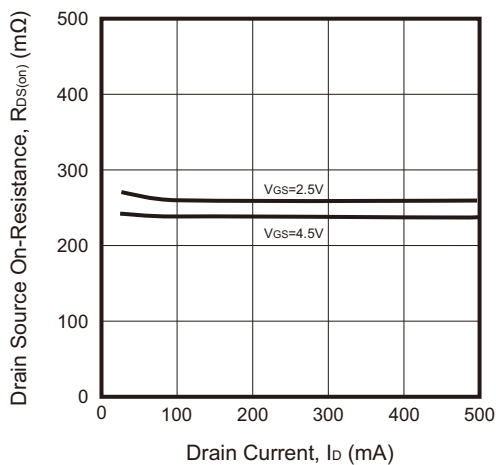


Fig.4 - On-Resistance Variation with Temperature

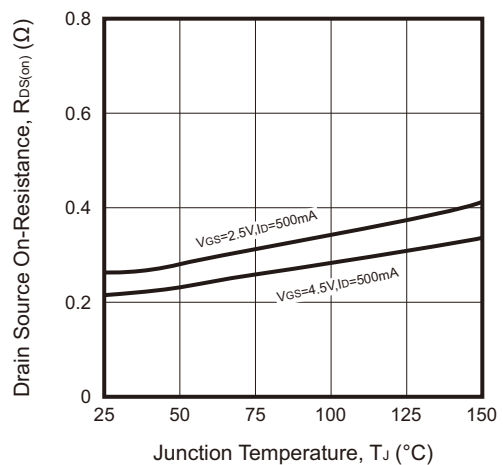


Fig.5 - On-Resistance vs. Gate Source Voltage

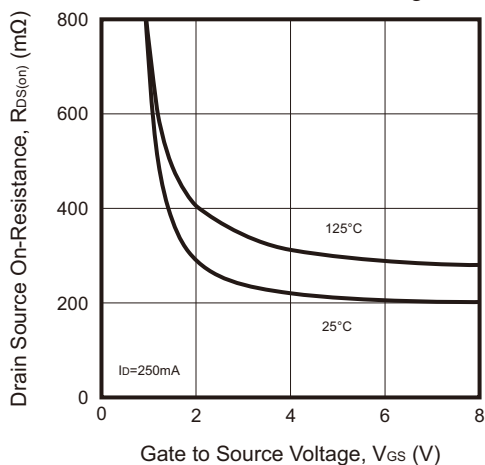
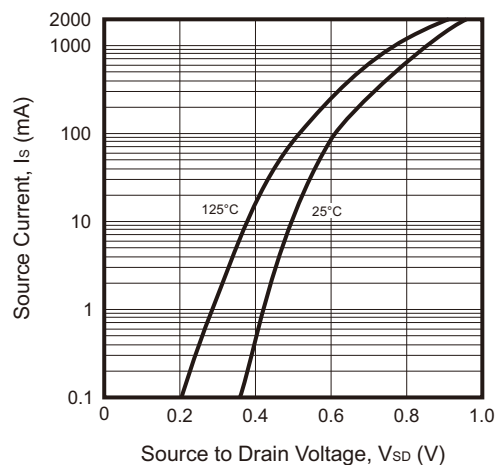


Fig.6 - Diode Forward Voltage vs. Current



## Typical Rating and Characteristic Curves (CMSQ03CN02A08K-HF)

Fig.7 - Gate Threshold Variation vs. Ambient Temperature

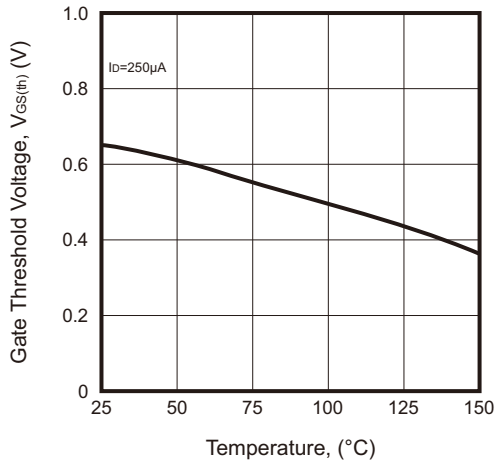


Fig.8 - Breakdown Voltage vs. Temperature

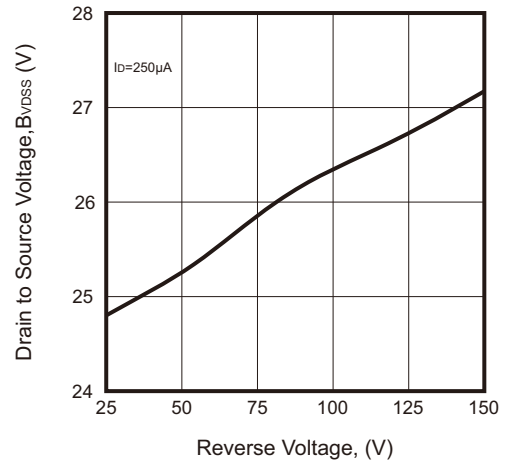
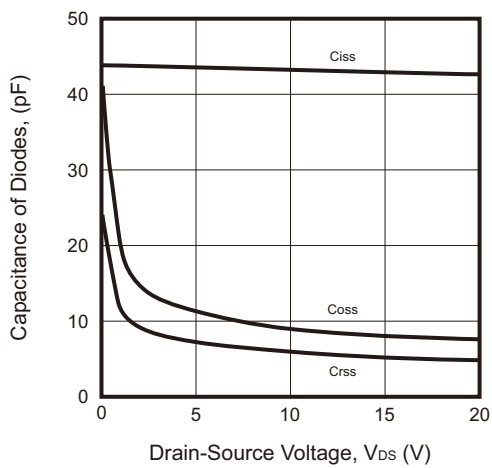
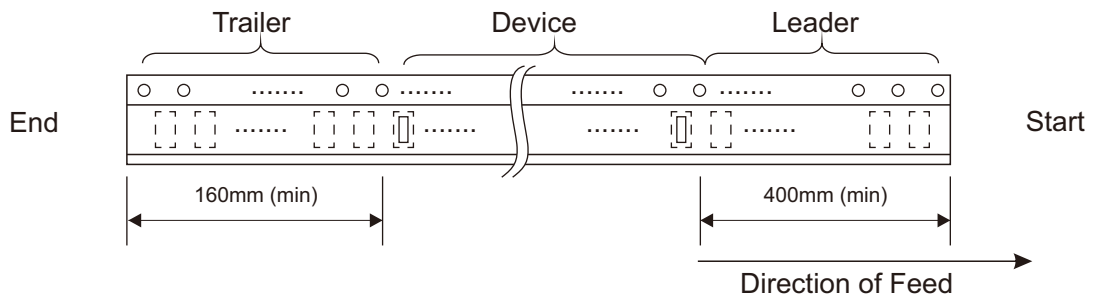
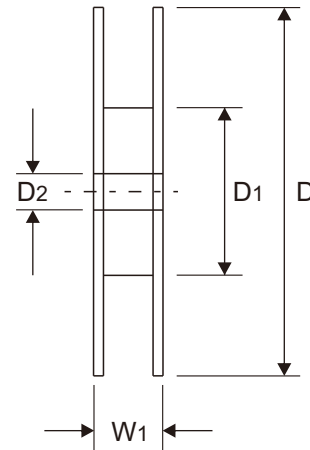
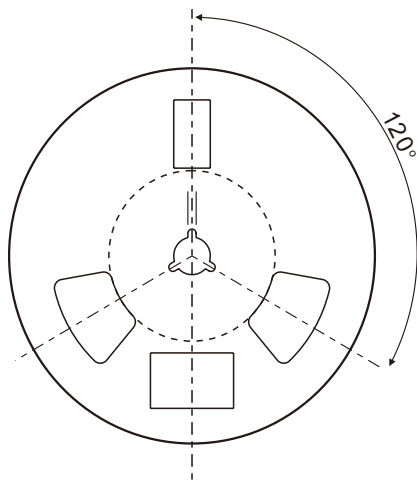
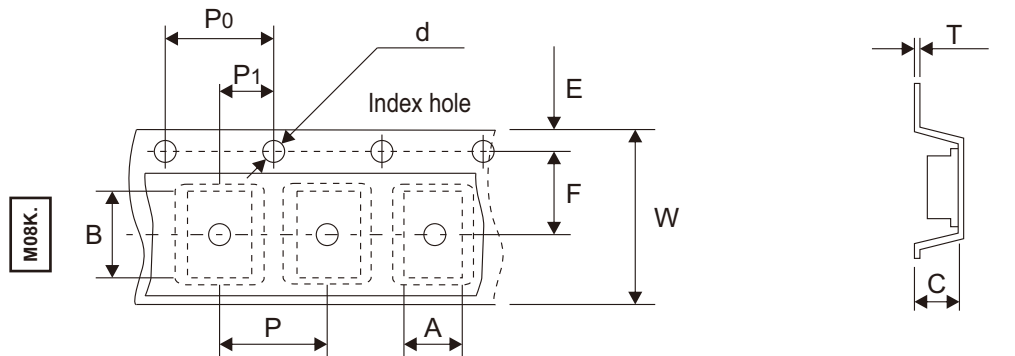


Fig.9 - Capacitance of Diodes



Reel Taping Specification



0402C-03 (SOT-883)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	0.75 ± 0.05	1.17 ± 0.05	0.65 ± 0.05	1.50 + 0.10 - 0.00	178.00 ± 1.00	60.00 ± 0.50	13.50 ± 0.20
	(inch)	0.030 ± 0.002	0.046 ± 0.002	0.026 ± 0.002	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.362 ± 0.020	0.531 ± 0.008

0402C-03 (SOT-883)	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.20 + 0.02 - 0.05	8.00 ± 0.20	12.00 + 0.50 - 0.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.008 + 0.001 - 0.002	0.315 ± 0.008	0.472 + 0.020 - 0.000

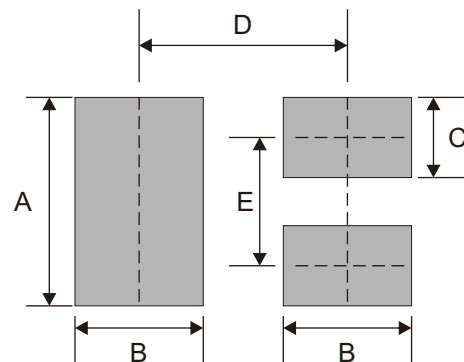
## Marking Code

Part Number	Marking Code
CMSQ03CN02A08K-HF	M08K.

# M08K.

## Suggested P.C.B. PAD Layout

SIZE	0402C-03 (SOT-883)	
	(mm)	(inch)
A	0.65	0.026
B	0.40	0.016
C	0.25	0.010
D	0.65	0.026
E	0.40	0.016



## Standard Packaging

Case Type	REEL PACK	
	REEL ( pcs )	Reel Size (inch)
0402C-03 (SOT-883)	5,000	7