

# MOSFET

**CMSQ03CN02A08K-HF**

# N-Channel RoHS Device Halogen Free



## Features

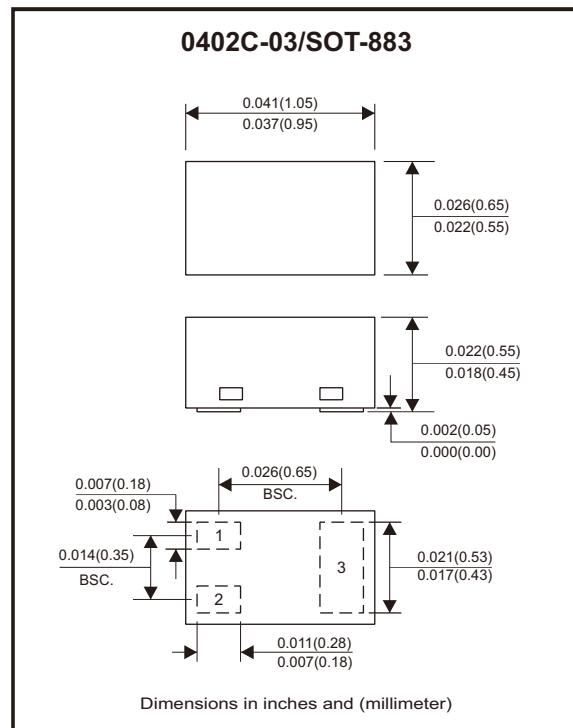
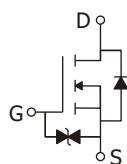
- Surface mount package.
  - Reliable and rugged.
  - ESD protection.

## 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	$^\circ\text{C}/\text{W}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (at  $T_A=25^\circ\text{C}$  unless otherwise noted)

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

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

Fig.1 - On-Region Characteristics

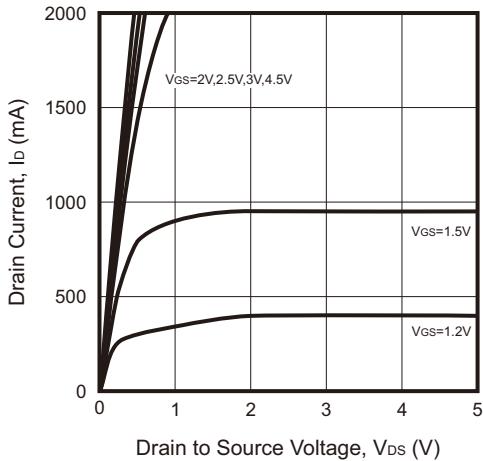


Fig.2 - Transfer Characteristics

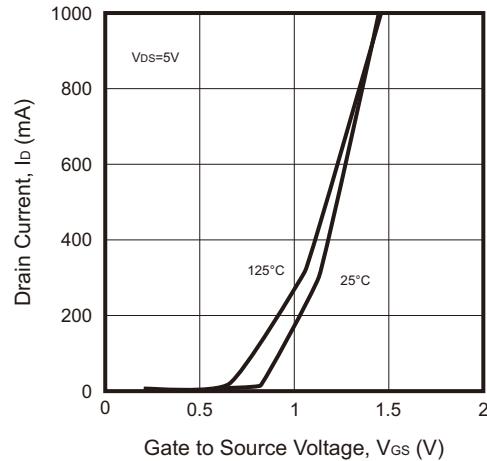


Fig.3 - On-Resistance vs. Drain Current Gate Voltage

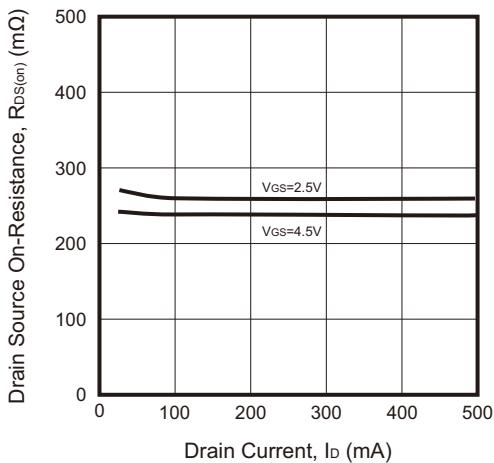


Fig.4 - On-Resistance Variation with Temperature

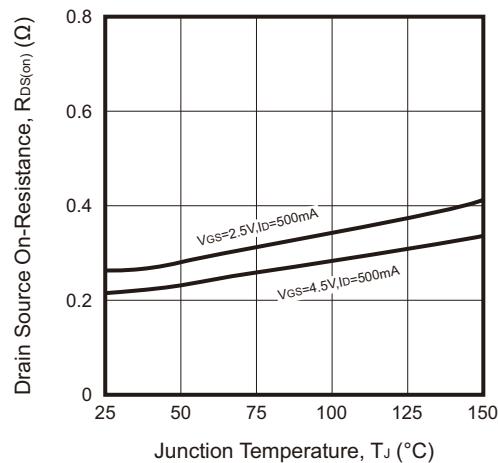


Fig.5 - On-Resistance vs. Gate to Source Voltage

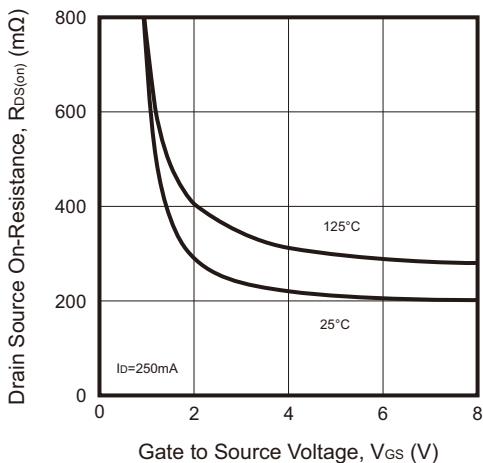
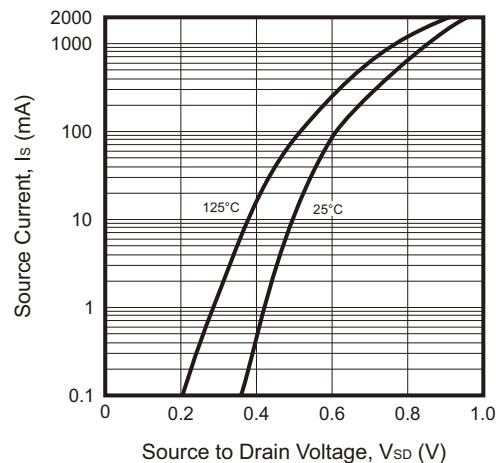


Fig.6 - Diode Forward Voltage vs. Current



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

Fig.7 - Gate Threshold Variation  
vs. Ambient Temperature

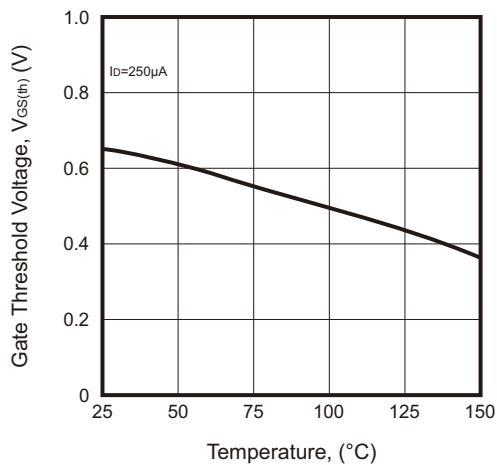


Fig.8 - Breakdown Voltage vs. Temperature

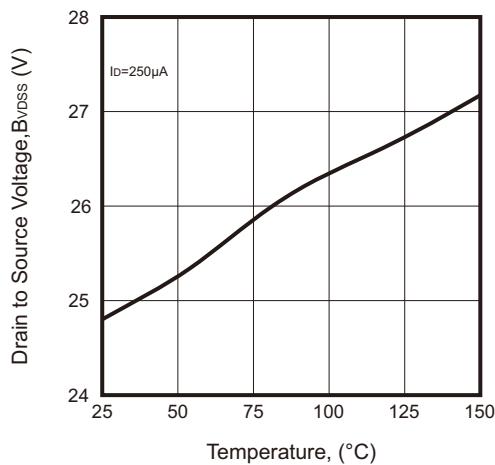
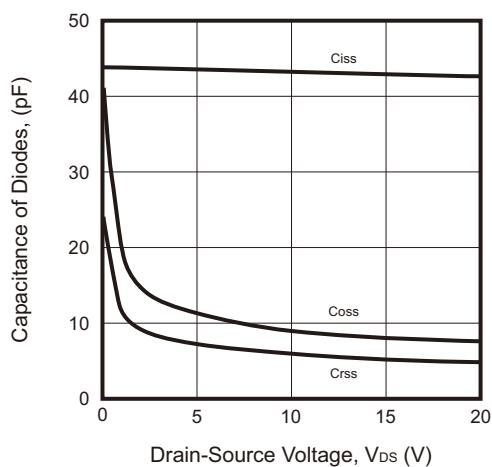
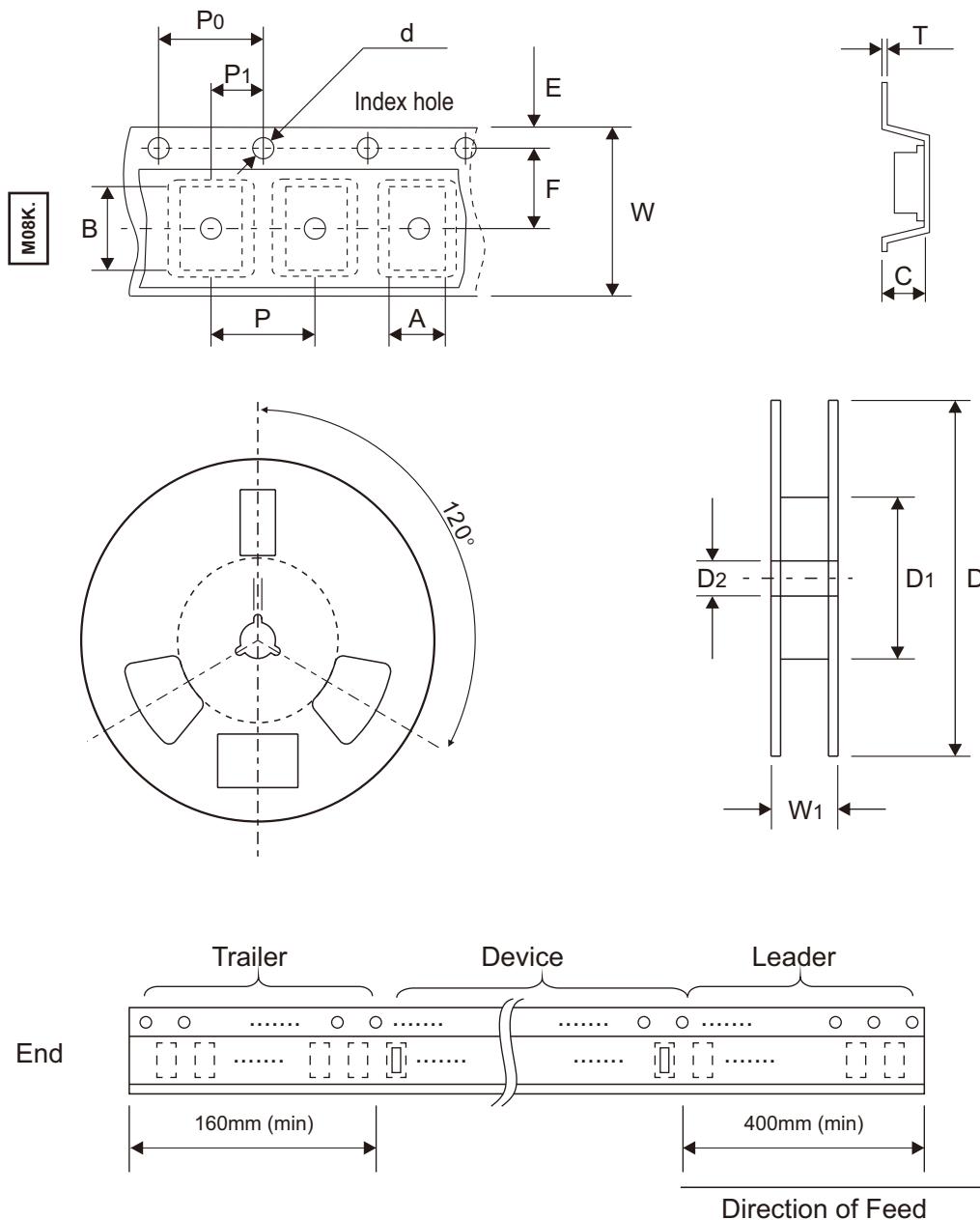


Fig.9 - Capacitance of Diodes



## Reel Taping Specification



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

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

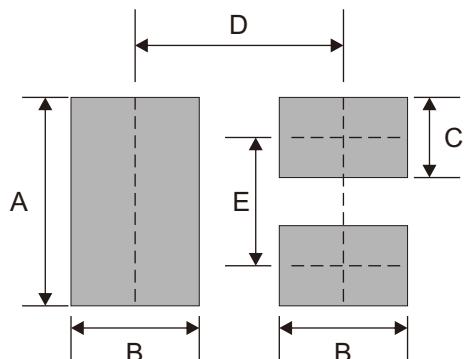
## Marking Code

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