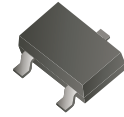


CMSN3416K-HF

N-Channel
RoHS Device
Halogen Free



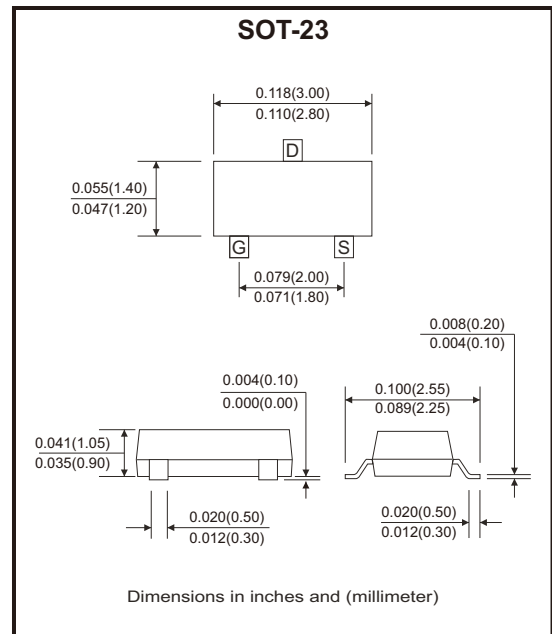
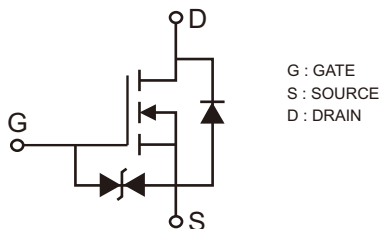
Features

- V_{DS} 20V
- I_D 7.0A
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <18 mohm
- $R_{DS(ON)}$ (at $V_{GS}=2.5V$) <22 mohm
- $R_{DS(ON)}$ (at $V_{GS}=1.8V$) <39 mohm
- ESD protected up to 3.5KV (HBM)

Mechanical data

- Case: SOT-23, molded plastic.

Circuit Diagram



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}	± 12	V
Drain current	$T_A=25^\circ\text{C}$ @ steady state	I_D	7.0	A
	$T_A=70^\circ\text{C}$ @ steady state		5.6	
Pulsed drain current (Note 1)		I_{DM}	30	A
Total power dissipation @ $T_A=25^\circ\text{C}$		P_D	1.3	W
Thermal resistance junction to ambient @ steady state		$R_{\theta JA}$	96	$^\circ\text{C/W}$
Junction and storage temperature range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (at T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Parameters						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V , I _D =250μA	20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V , V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±10V , V _{DS} =0V		2.5	±10	μA
		V _{GS} =±5V , V _{DS} =0V		300	±1000	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.62	1.0	V
Static drain-source on-resistance	R _{DS(ON)}	V _{GS} =4.5V , I _D =7A		13	18	mΩ
		V _{GS} =2.5V , I _D =4A		17	22	
		V _{GS} =1.8V , I _D =3A		27	39	
Diode forward voltage	V _{SD}	I _S =7A , V _{GS} =0V			1.2	V
Max. body-diode continuous current	I _S				7.0	A
Dynamic Parameters						
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		980		pF
Output capacitance	C _{oss}			225		
Reverse transfer capacitance	C _{rss}			120		
Switching Parameters						
Total gate charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =7A		8.1		nC
Gate-source charge	Q _{gs}			2.4		
Gate-drain charge	Q _{gd}			3		
Turn-on delay time	t _{d(on)}	V _{GS} =4.5V, V _{DD} =10V R _L =1.5Ω, R _{GEN} =3Ω		1.2		ns
Turn-on rise time	t _r			2.4		
Turn-off delay time	t _{d(off)}			22		
Turn-off fall time	t _f			7		

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Rating and Characteristic Curves (CMSN3416K-HF)

Fig.1 - Output Characteristics

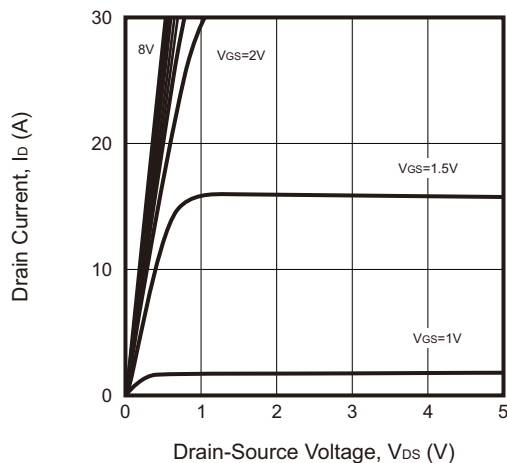


Fig.2 - Transfer Characteristics

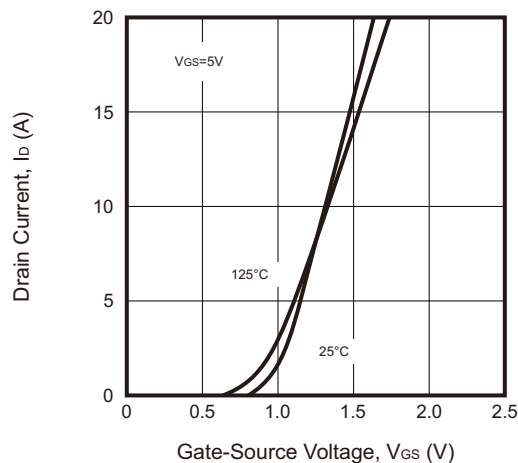


Fig.3 - Capacitance Characteristics

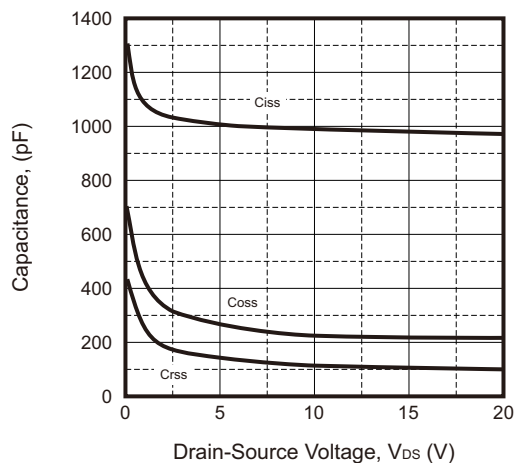


Fig.4 - Gate Charge

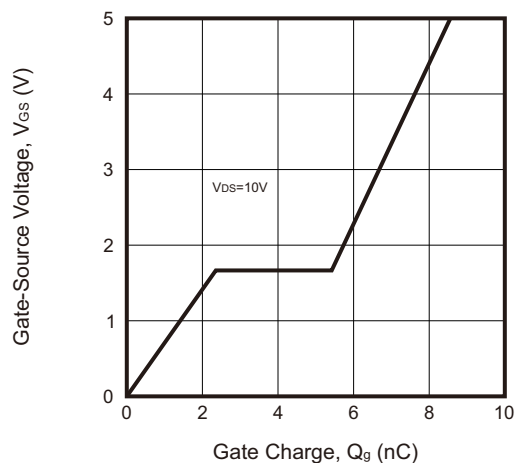


Fig.5 - Drain-Source on Resistance

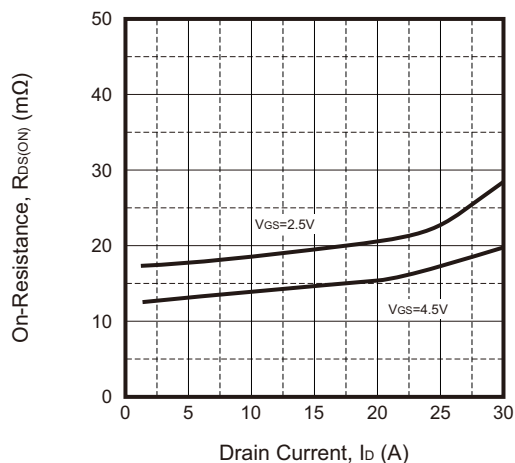
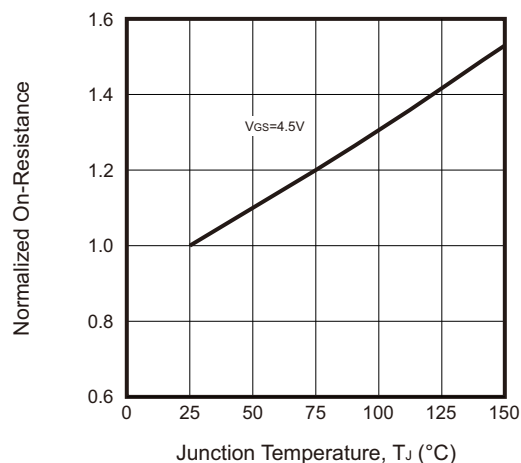


Fig.6 - Drain-Source on Resistance

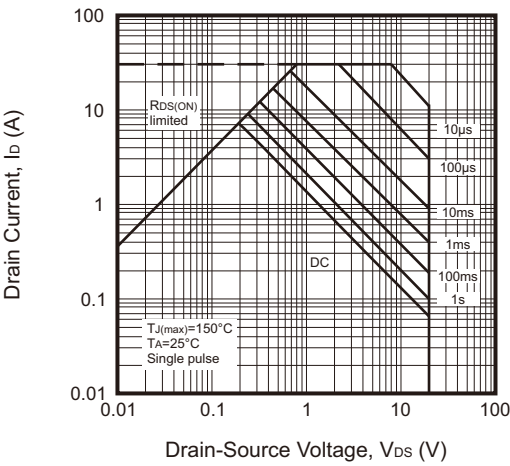


Company reserves the right to improve product design , functions and reliability without notice.

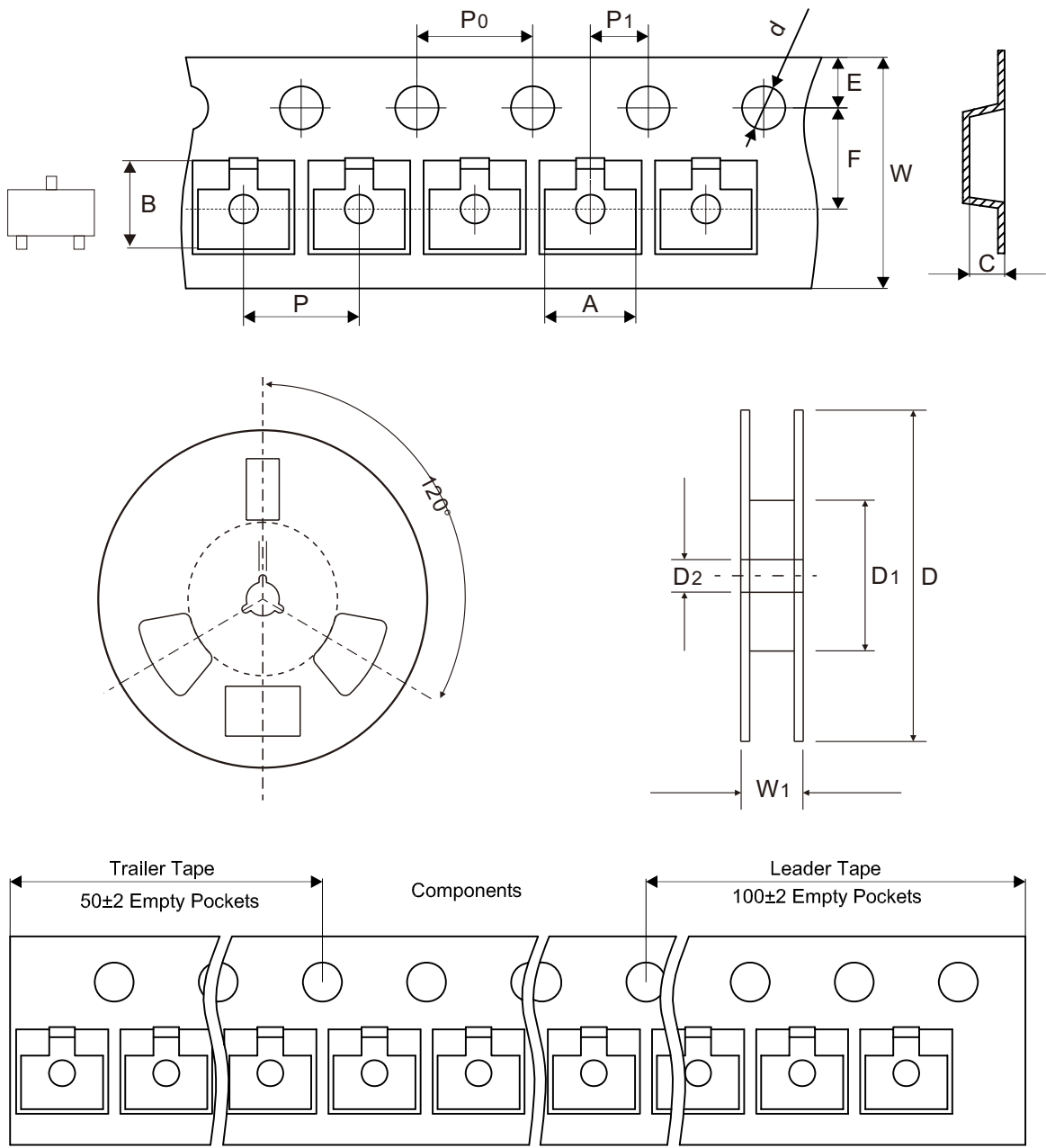
REV:A

Rating and Characteristic Curves (CMSN3416K-HF)

Fig.7 - Safe Operation Area



Reel Taping Specification

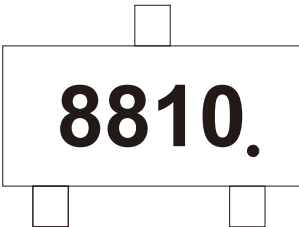


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 1.00	54.60 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.150 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 - 0.10	11.10 ± 0.20
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 - 0.004	0.437 ± 0.008

Marking Code

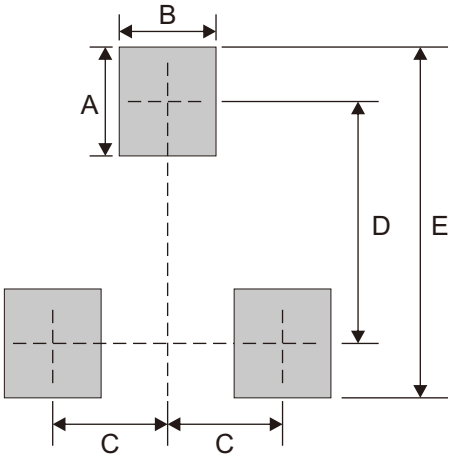
Part Number	Marking Code
CMSN3416K-HF	8810.



Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114

Note: 1. The pad layout is for reference purposes only.



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23	3,000	7