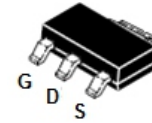


CMS01N60Y-HF

N-Channel
RoHS Device
Halogen Free


Features

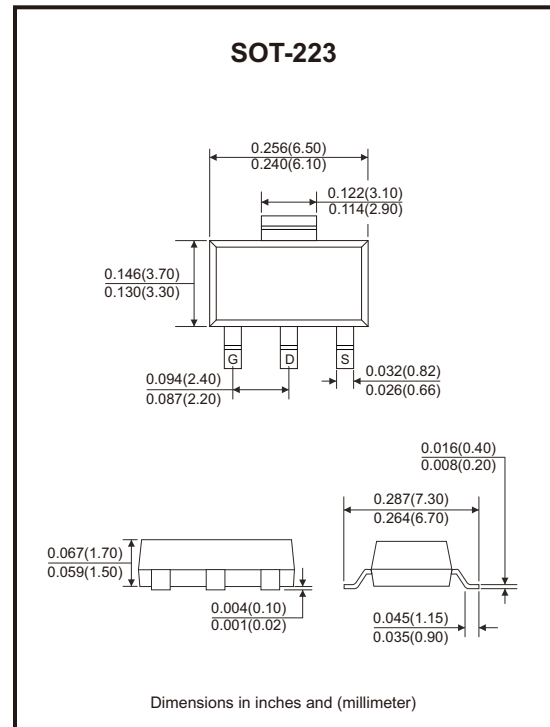
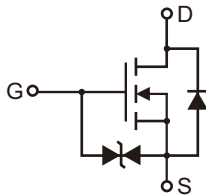
- Fast switching.
- ESD improved capability.
- Low gate charge.
- Low reverse transfer capacitances.

Mechanical data

- Case: SOT-223, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderability-per MIL-STD-202, method 208.

Circuit Diagram

G: Gate
S: Source
D: Drain



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	600	V
Gate-source voltage	V_{GS}	± 30	V
Continuous drain current ($T_C=25^\circ\text{C}$)	I_D	1	A
Continuous drain current ($T_A=25^\circ\text{C}$) (Note 2)		0.35	
Continuous drain current ($T_A=70^\circ\text{C}$) (Note 2)		0.28	
Pulsed drain current ($t_p=10\mu\text{s}$, $T_C=25^\circ\text{C}$)	I_{DM}	6	A
Pulsed drain current ($t_p=10\mu\text{s}$, $T_A=25^\circ\text{C}$)		3.5	
Single pulse avalanche energy (Note 4)	E_{AS}	60	mJ
Power dissipation ($T_C=25^\circ\text{C}$)	P_D	20	W
Power dissipation ($T_A=25^\circ\text{C}$) (Note 2)		2.5	
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case	$R_{\theta JC}$			6.2	$^\circ\text{C/W}$
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$			100	$^\circ\text{C/W}$
Thermal resistance junction to air (Note 2)			42	50	$^\circ\text{C/W}$

REV:A

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{DSS}	V _{GS} = 0V, I _D = 250μA	600			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 600V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±10	μA
On Characteristics						
Drain-source on-resistance (Note 3)	R _{DS(on)}	V _{GS} = 10V, I _D = 0.75A		7	8	Ω
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Gate resistance	R _G	V _{GS} = 0V, f = 1MHz		11		Ω
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		178		pF
Output capacitance	C _{oss}			20		
Reverse transfer capacitance	C _{rss}			3		
Switching Characteristics						
Turn-on delay time (Note 5)	t _{d(on)}	V _{DD} = 300V, V _{GS} = 10V, R _G = 4.7Ω, I _D = 1.5A		8		ns
Turn-on rise time (Note 5)	t _r			30		
Turn-off delay time (Note 5)	t _{d(off)}			22		
Turn-off fall time (Note 5)	t _f			55		
Total gate charge	Q _g	V _{DD} = 480V, I _D = 1.5A, V _{GS} = 10V		7.7		nC
Gate to source charge	Q _{gs}			0.9		
Gate to drain (miller) charge	Q _{gd}			5.3		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 3)	V _{SD}	I _{SD} = 1.5A, V _{GS} = 0V		0.9	1.5	V
Reverse recovery time	t _{rr}	I _{SD} = 1.5A, V _{GS} = 0V di/dt = 100A/μs		245		ns
Reverse recovery charge	Q _{rr}			795		nC

- Notes: 1. The data tested by surface mounted on a minimum recommended FR-4 board.
 2. The data tested by surface mounted on a 1inch² FR-4 board with 2OZ copper.
 3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 4. The EAS data shows Max. rating. The test condition is $V_{DD}=100V, V_{GS}=10V, L=50mH$.
 5. Guaranteed by design, not subject to production.

Rating and Characteristic Curves (CMS01N60Y-HF)

Fig.1 - Power Dissipation

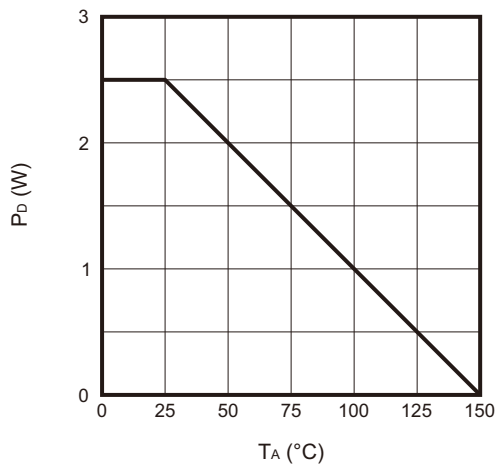


Fig.2 - Drain Current

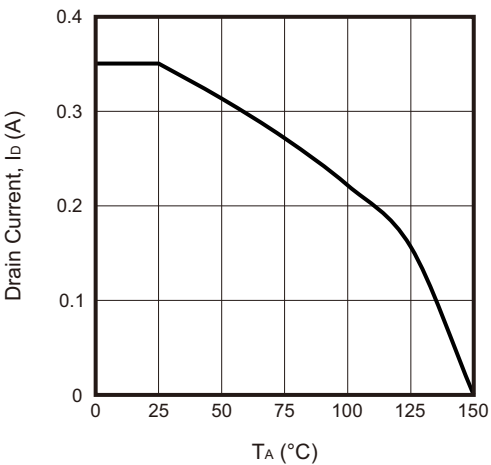


Fig.3 - Typical Output Characteristics

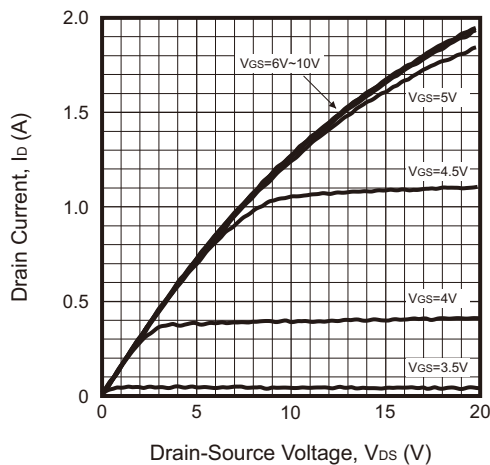


Fig.4 - On-Resistance vs. Drain Current and Gate Voltage

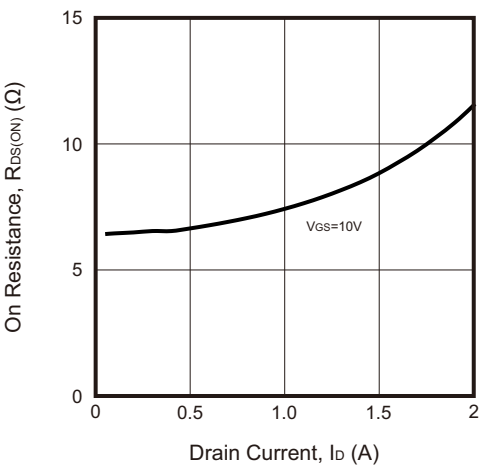


Fig.5 - On-Resistance vs. Gate-Source Voltage

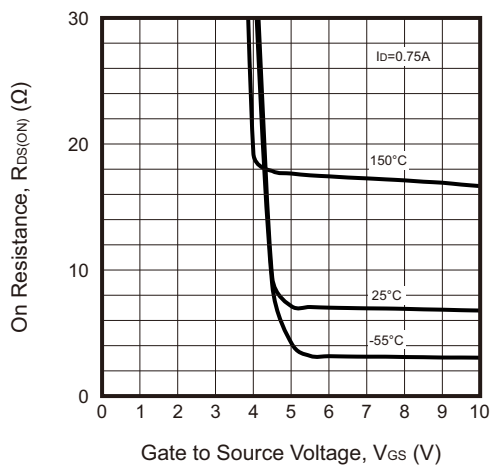
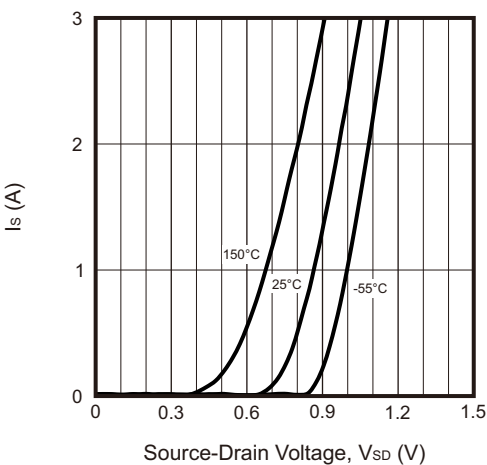


Fig.6 - Body-Diode Characteristics



Rating and Characteristic Curves (CMS01N60Y-HF)

Fig.7 - Normalized On-Resistance vs. Junction Temperature

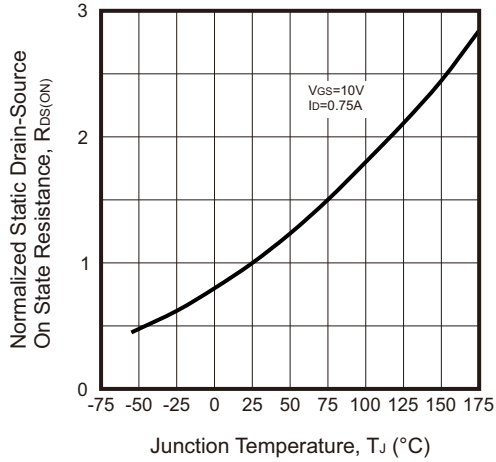


Fig.8 - Transfer Characteristics

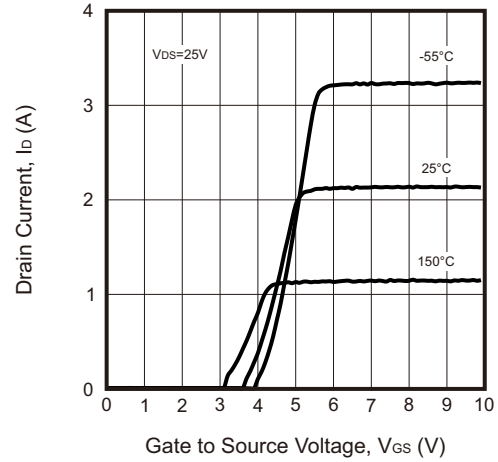


Fig.9 - Capacitance Characteristics

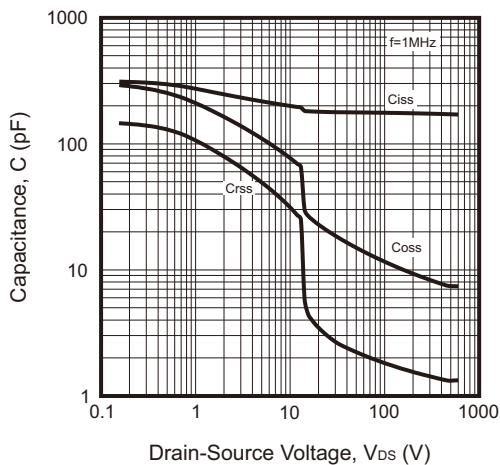


Fig.10 - Gate-Charge Characteristics

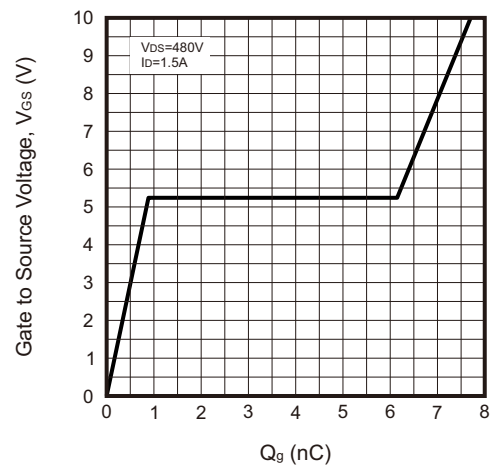


Fig.11 - Normalized Breakdown Voltage vs. Junction Temperature

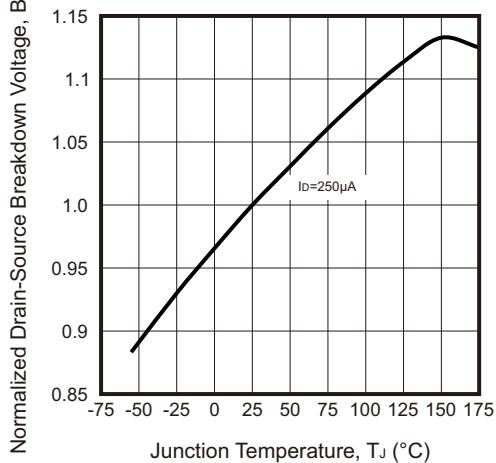
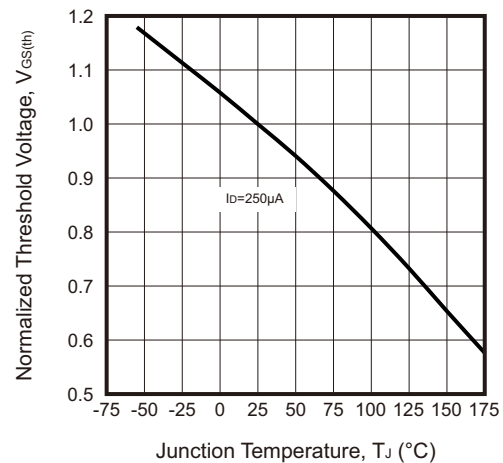
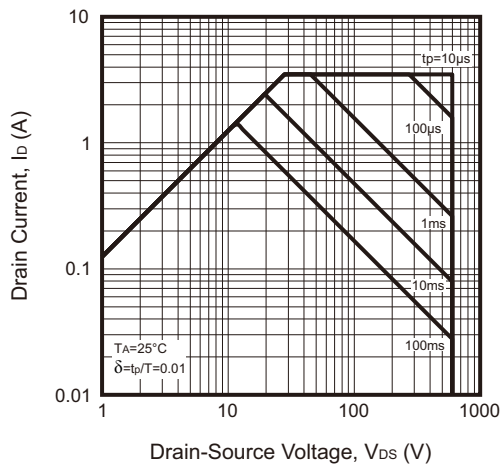


Fig.12 - Normalized $V_{GS(th)}$ vs. Junction Temperature

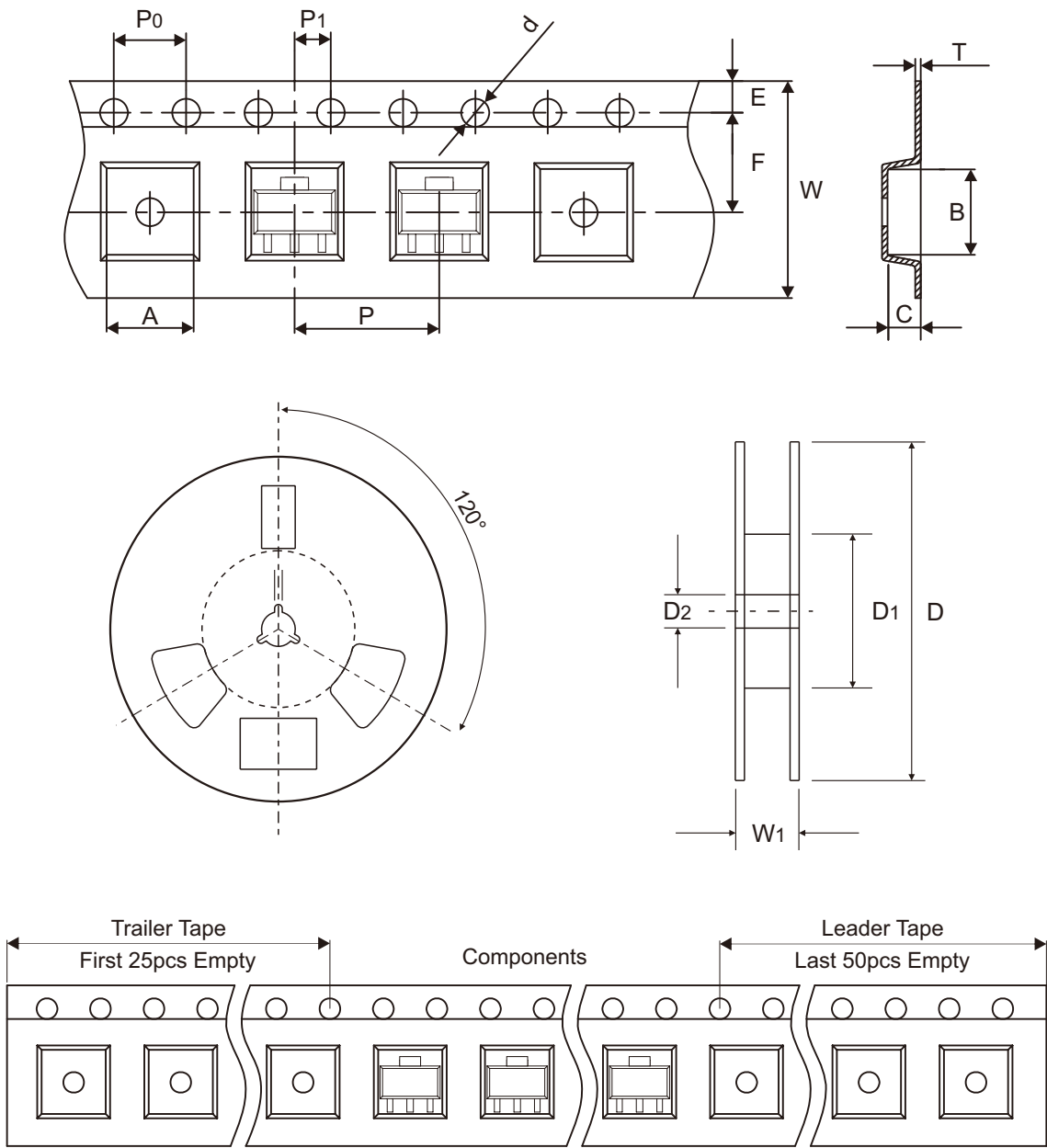


Rating and Characteristic Curves (CMS01N60Y-HF)

Fig.13 - Safe Operation Area



Reel Taping Specification

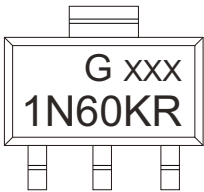


SOT-223	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	7.05 ± 0.10	7.40 ± 0.10	1.90 ± 0.10	1.55 ± 0.05	330.00 ± 2.00	100.00 ± 2.00	13.00 ± 0.20
	(inch)	0.278 ± 0.004	0.291 ± 0.004	0.075 ± 0.004	0.061 ± 0.002	12.992 ± 0.079	3.937 ± 0.079	0.512 ± 0.008

SOT-223	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.25 ± 0.05	12.00 + 0.30 - 0.10	18.50 ± 2.00
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.010 ± 0.002	0.472 + 0.012 - 0.004	0.728 ± 0.079

Marking Code

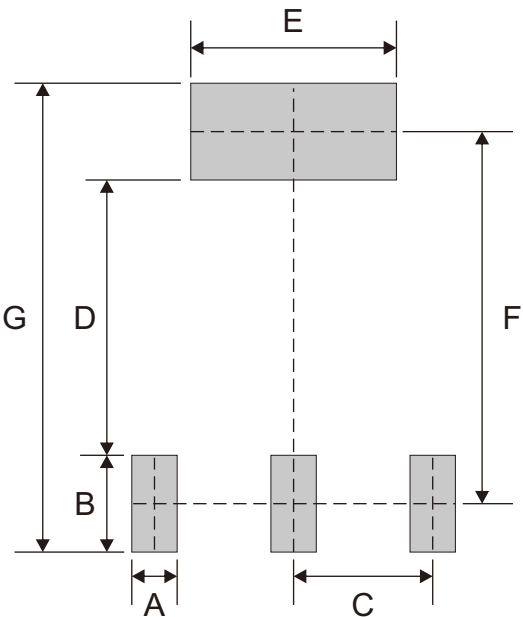
Part Number	Marking Code
CMS01N60Y-HF	1N60KR



XXX = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-223	
	(mm)	(inch)
A	0.75	0.030
B	1.60	0.063
C	2.30	0.091
D	4.55	0.179
E	3.40	0.134
F	6.15	0.242
G	7.75	0.305



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-223	4,000	13