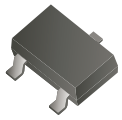
MOSFET

CMS03N06TA-HF

N-Channel
RoHS Device
Halogen Free



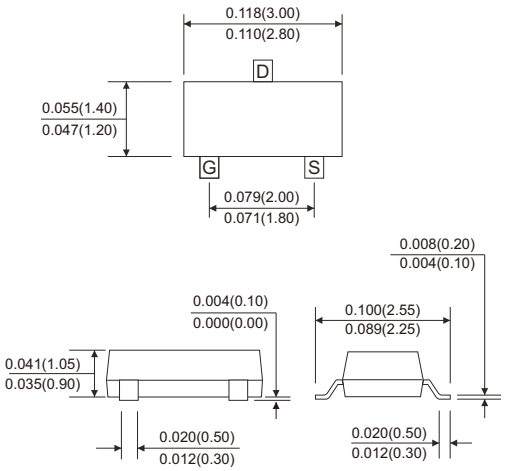
Features

- Excellent package for heat dissipation.
- High density cell design for low $R_{DS(ON)}$.

Mechanical data

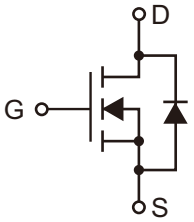
- Case: SOT-23, molded plastic.
- Mounting position: Any.

SOT-23



Dimensions in inches and (millimeter)

Circuit Diagram



G : GATE
S : SOURCE
D : DRAIN

Maximum Ratings (at Ta=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	±20	V
Drain current	T_A=25°C	I_D	3	A
	T_A=70°C		2.4	
Pulsed drain current (Note 1)		I_{DM}	12	A
Total power dissipation	T_A=25°C	P_D	1.2	W
	T_A=70°C		0.8	
Thermal resistance junction to ambient (Note 2)		$R_{\theta JA}$	104	°C/W
Junction and storage temperature range		T_J, T_{STG}	-55 to +150	°C

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.

2. $R_{\theta JA}$ is the sum of the junction to case and case to ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is quaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

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	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
		V_{GS} = ±10V, V_{DS} = 0V			±50	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.9	1.3	2.0	V
Static drain-source on-resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 3A		86	100	mΩ
		V_{GS} = 4.5V, I_D = 2A		92	120	
Diode forward voltage	V_{SD}	I_S = 3A, V_{GS} = 0V			1.2	V
Dynamic Parameters						
Input capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz		409		pF
Output capacitance	C_{oss}			50		
Reverse transfer capacitance	C_{rss}			41		
Switching Parameters						
Total gate charge	Q_g	V_{GS} = 10V, V_{DS} = 30V, I_D = 3A		10.27		nC
Gate source charge	Q_{gs}			1.65		
Gate drain charge	Q_{gd}			2.11		
Reverse recovery charge	Q_{rr}	I_F = 3A, di/dt = 100A/μs		6.99		
Reverse recovery time	t_{rr}			32.6		
Turn-on delay time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} = 30V, R_L = 20Ω, R_{GEN} = 3Ω		3.6		ns
Turn-on rise time	t_r			17.6		
Turn-off delay time	$t_{d(off)}$			13		
Turn-off fall time	t_f			23		

Typical Rating and Characteristic Curves (CMS03N06TA-HF)

Fig.1 - Output Characteristics

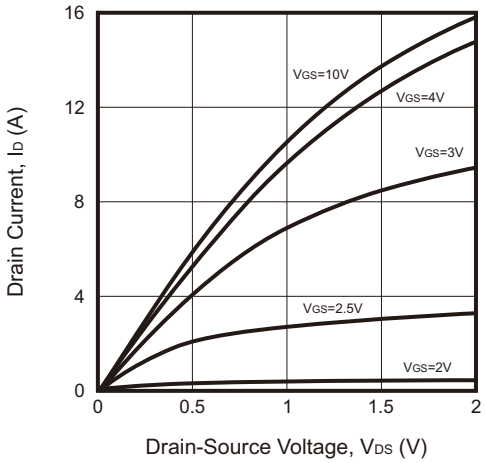


Fig.2 - Transfer Characteristics

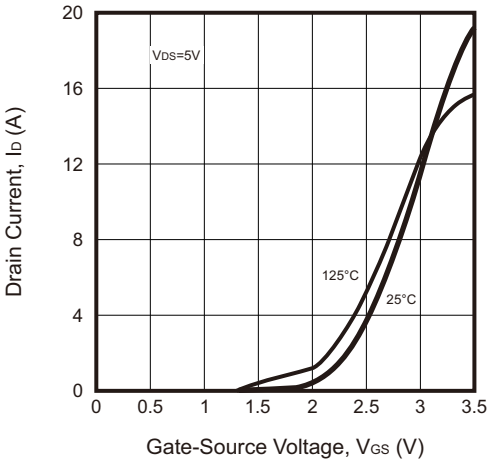


Fig.3 - On-Resistance vs. Drain Current and Cate Voltage

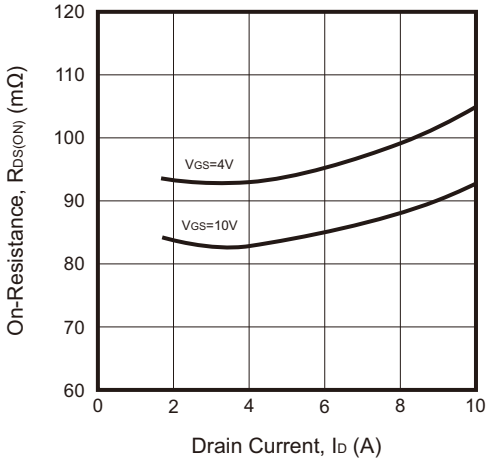


Fig.4 - On-Resistance vs. Junction Temperature

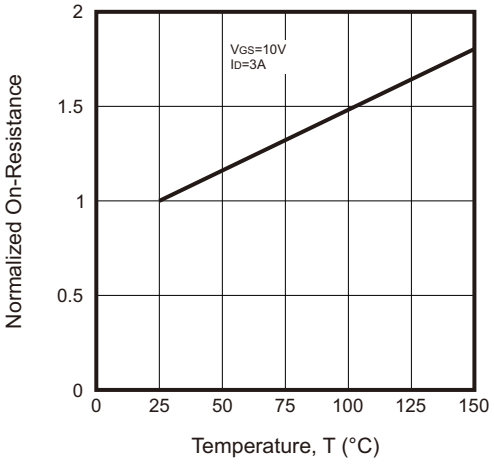


Fig.5 - Capacitance Characteristics

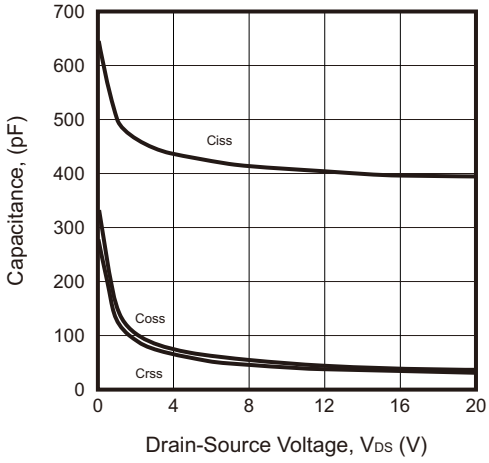
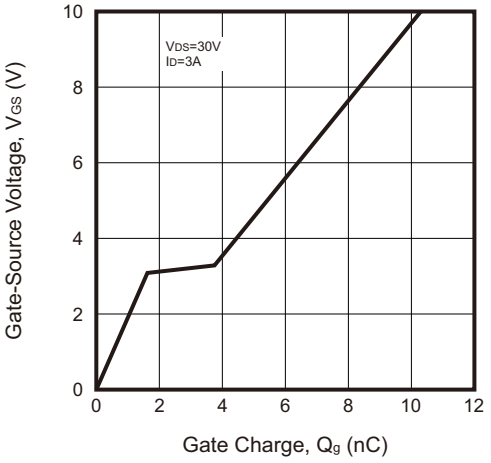


Fig.6 - Gate Charge



Typical Rating and Characteristic Curves (CMS03N06TA-HF)

Fig.7 - Safe Operation Area

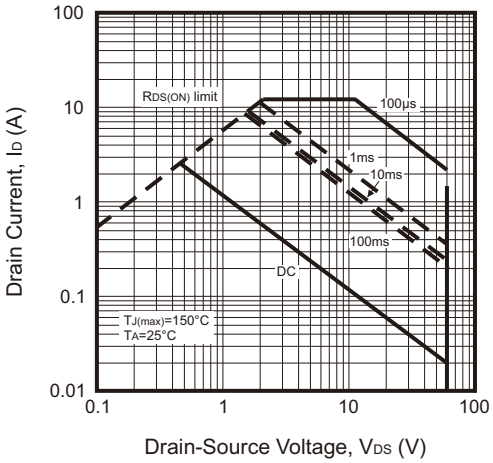
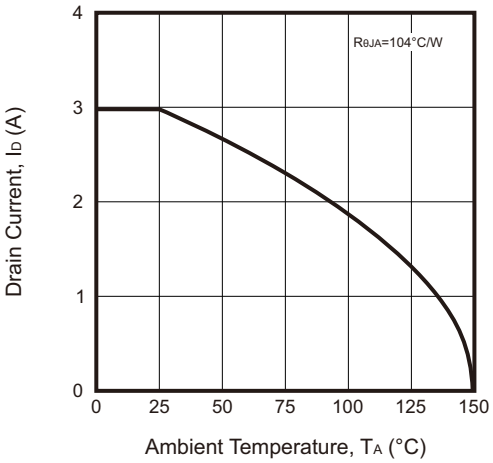
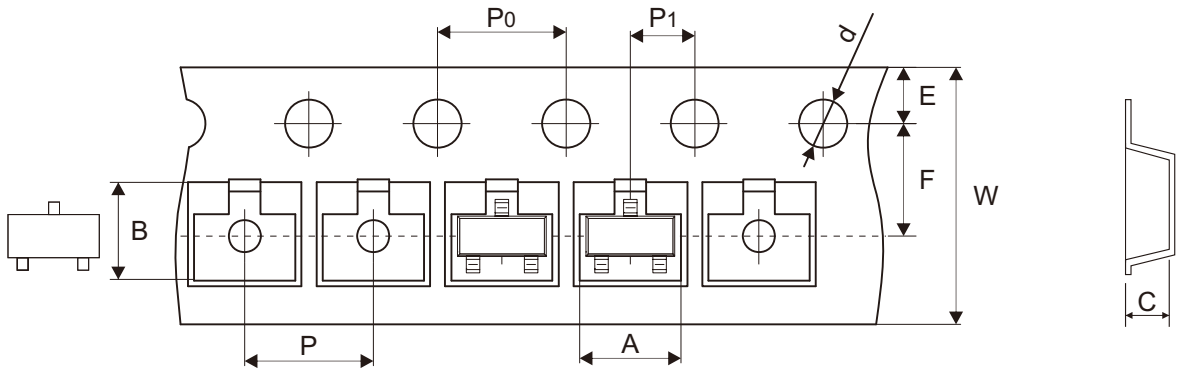
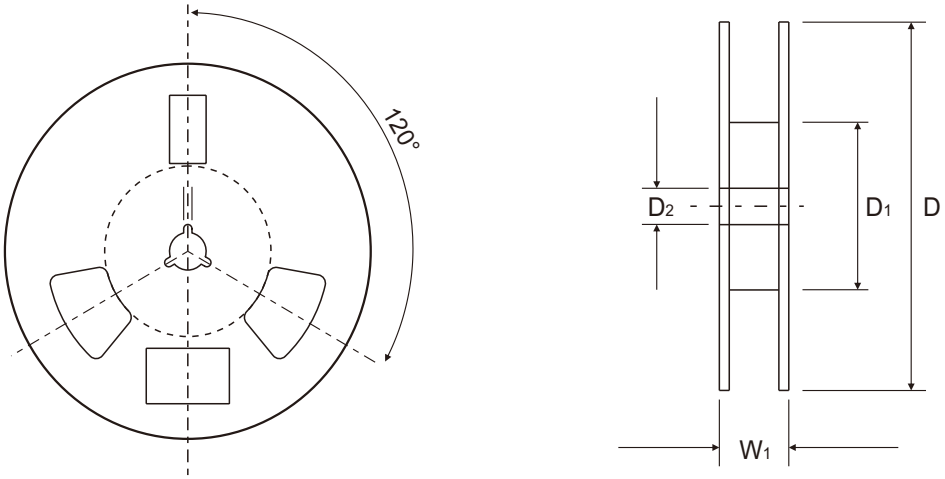


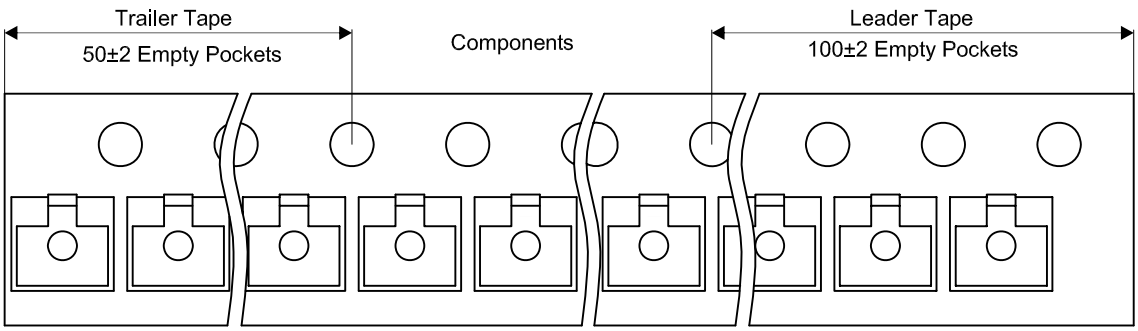
Fig.8 - Maximum Continuous Drain Current vs. Ambient Temperature



Reel Taping Specification





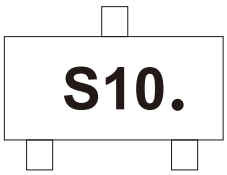


	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 + 0.10 − 0.00	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 + 0.004 − 0.000	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-23	(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	12.30 ± 1.00
	(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	0.484 ± 0.039

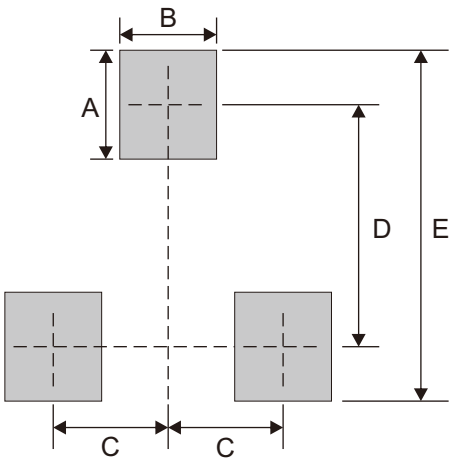
Marking Code

Part Number	Marking Code
CMS03N06TA-HF	S10.



Suggested P.C.B. 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



Standard Packaging

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