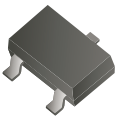


CMS03N06TL-HF

N-Channel
RoHS Device
Halogen Free



Features

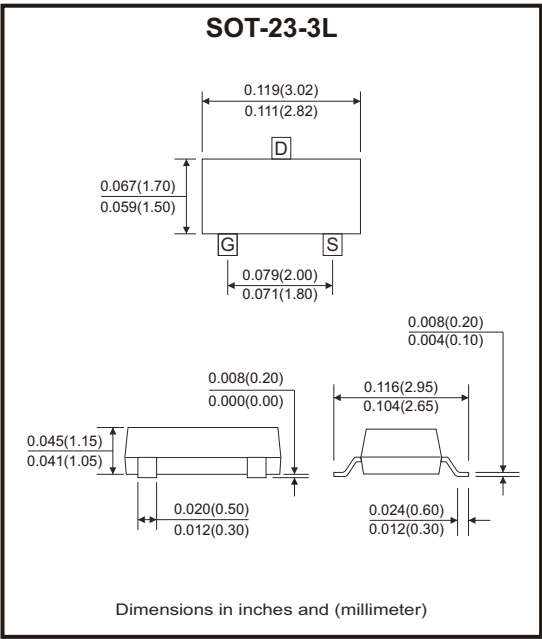
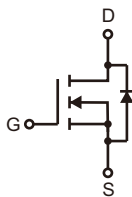
- High speed switching.
- Power switching application.

Mechanical data

- Case: SOT-23-3L, molded plastic.
- Terminal: Solderable per MIL-STD-750, method 2026.
- Mounting position: Any.

Circuit Diagram

- G: Gate
- S: Source
- D: Drain



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

Parameter	Conditions	Symbol	Value	Unit
Drain-source voltage		V _{DS}	60	V
Gate-source voltage		V _{GS}	±20	
Drain current	T _A = 25°C	I _D	3	A
	T _A = 100°C	I _D	1.9	
Pulsed drain current (Note 1)		I _{DM}	18	A
Total power dissipation (Note 2)	T _A = 25°C	P _D	1.2	W
	T _A = 100°C	P _D	0.45	
Operating junction and storage temperature range		T _J , T _{STG}	-55 to +150	°C

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction-ambient (Note 3)	R _{θJA}		85	105	°C/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Parameter						
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
		V _{DS} = 60V, V _{GS} = 0V, T _J = 150°C			100	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.9	1.35	2	V
Static drain-source on-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 3A		62	85	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 3A		70	95	mΩ
Diode forward voltage	V _{SD}	I _S = 3A, V _{GS} = 0V		0.85	1.2	V
Gate resistance	R _g	f = 1MHz, Open drain		2		Ω
Maximum body diode continuous current	I _S				3	A
Dynamic Parameter						
Input capacitance	C _{iss}	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz		500		pF
Output capacitance	C _{oss}			28		
Reverse transfer capacitance	C _{rss}			22		
Switching Parameter						
Total gate charge	Q _g	V _{DS} = 10V, V _{GS} = 30V, I _D = 3A		10		nC
Gate-source charge	Q _{gs}			1.7		
Gate-drain charge	Q _{gd}			2.1		
Reverse recovery charge	Q _{rr}	I _F = 3A, di/dt = 100A/μs		7		nC
Reverse recovery time	t _{rr}			33		nS
Turn-on delay time	t _{d(on)}	V _{GS} = 10V, V _{DD} = 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		

Notes: 1. Repetitive rating, pulse width limited by max. junction temperature.
 2. P_D is based on max. junction temperature, using junction case thermal resistance.
 3. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with $T_A=25^{\circ}\text{C}$.
 The maximum allowed junction temperature of 150°C .
 The value in any given application depends on the user's specific board design.

Typical Rating and Characteristic Curves (CMS03N06TL-HF)

Fig.1 - Output Characteristics

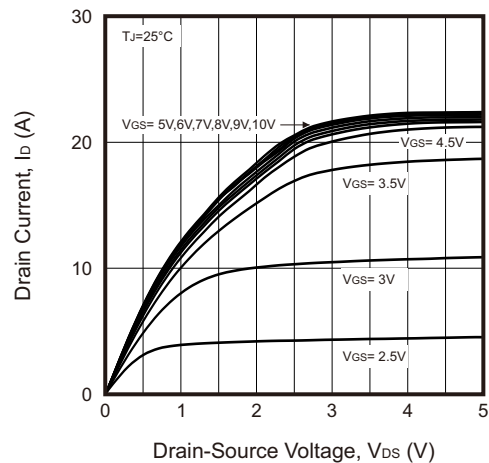


Fig.2 - Transfer Characteristics

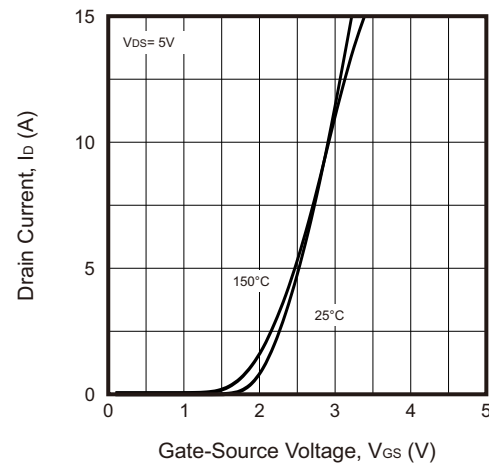


Fig.3 - Capacitance Characteristics

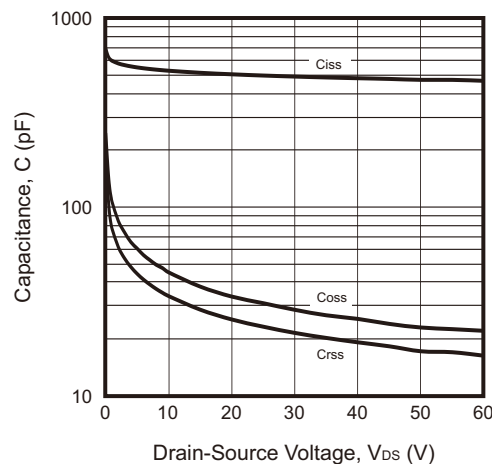


Fig.4 - Gate Charge

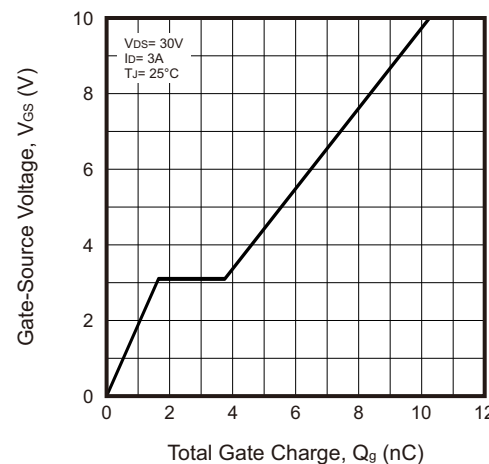


Fig.5 - On-Resistance vs Gate-Source Voltage

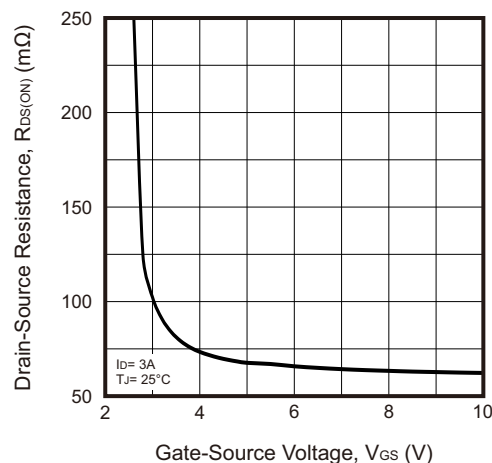
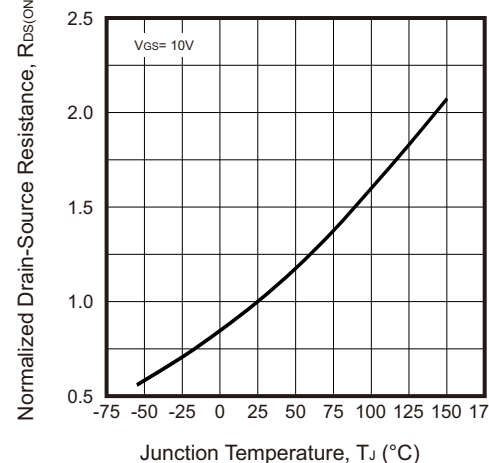


Fig.6 - Normalized On-Resistance



Typical Rating and Characteristic Curves (CMS03N06TL-HF)

Fig.7 - Drain-Source Resistance vs Drain Current

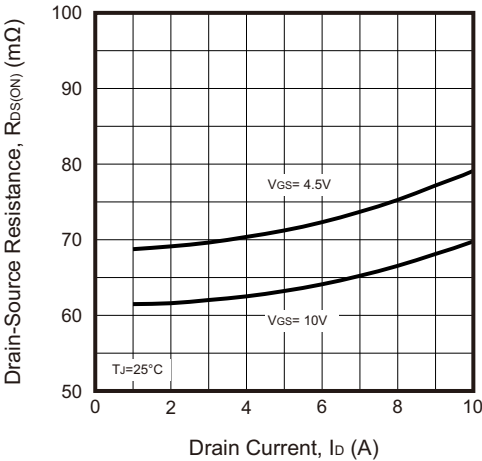


Fig.8 - Forward Characteristics of Reverse Diode

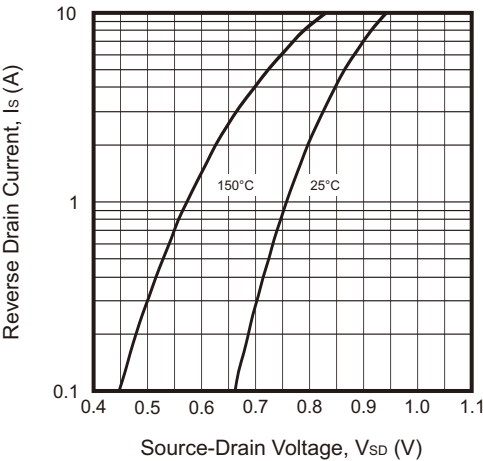


Fig.9 - Normalized Breakdown Voltage

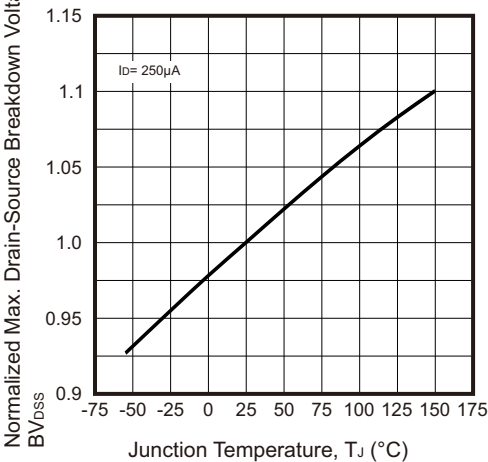


Fig.10 - Normalized Threshold Voltage

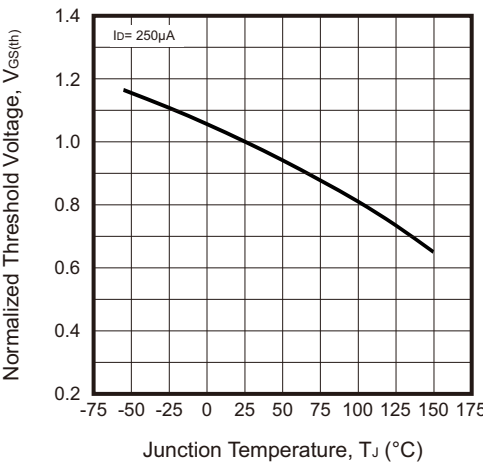


Fig.11 - Current Dissipation

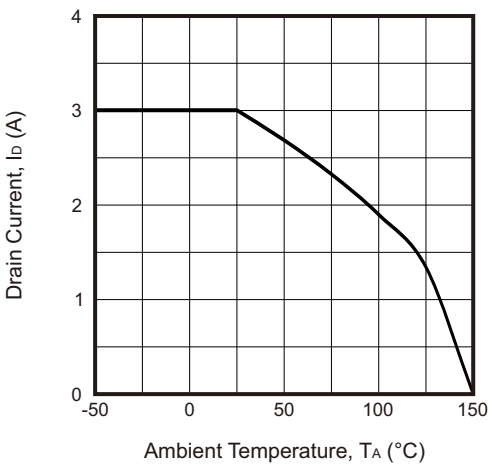
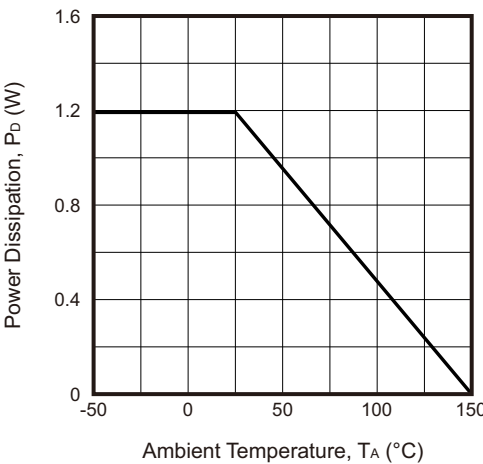
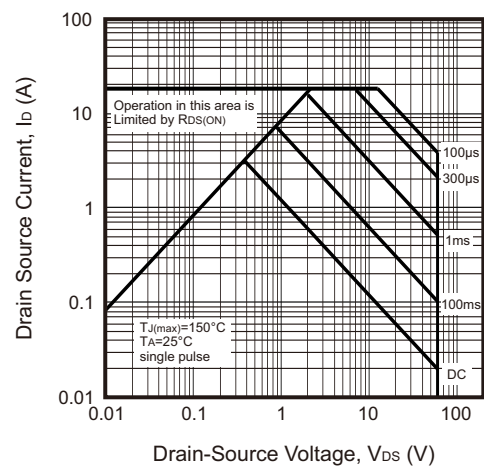


Fig.12 - Power Dissipation

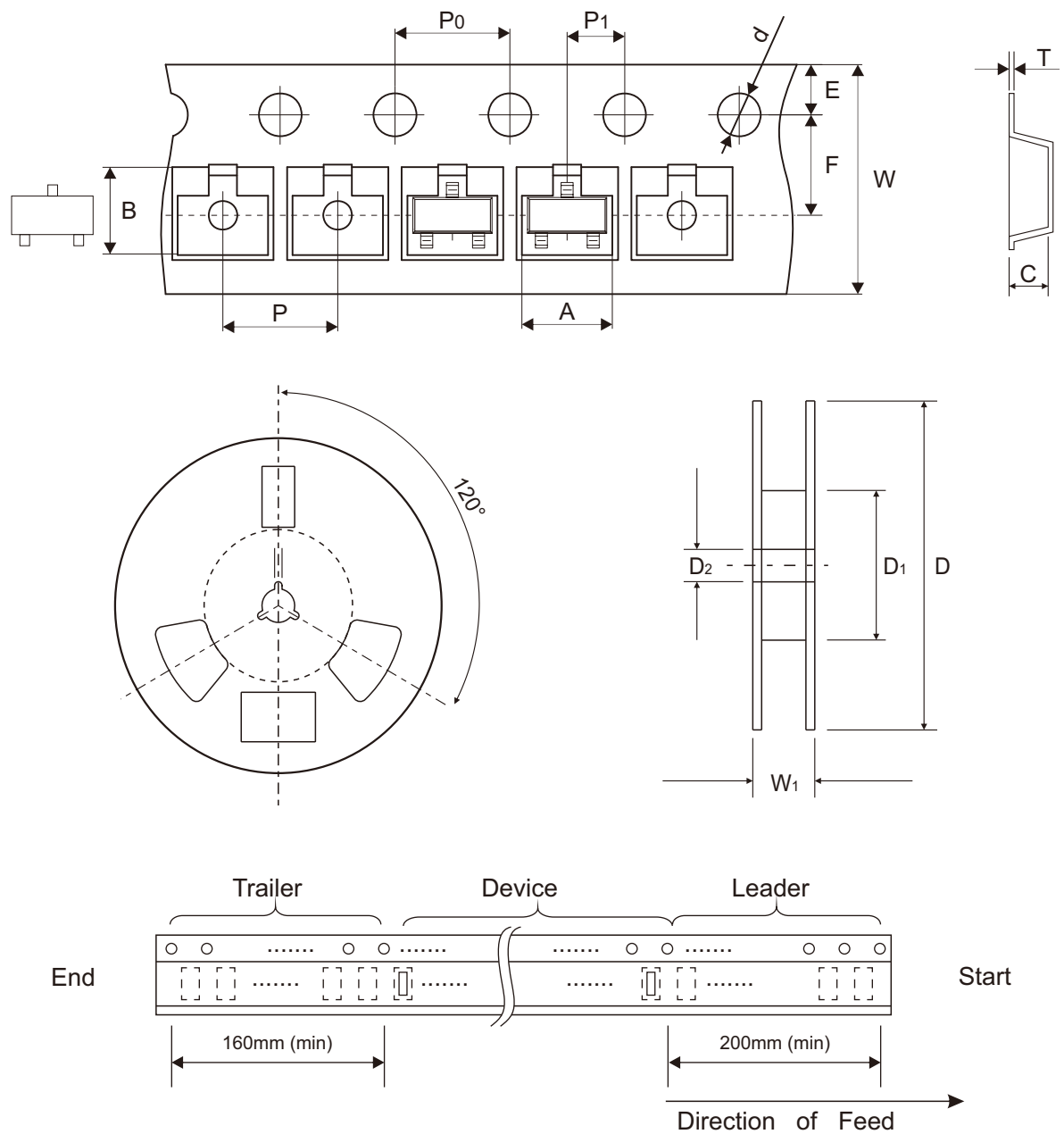


Typical Rating and Characteristic Curves (CMS03N06TL-HF)

Fig.13 - Safe Operating Area



Reel Taping Specification

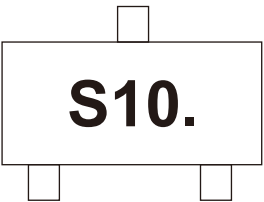


SOT-23-3L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.76 ± 0.20	1.25 ± 0.10	1.60 ± 0.10	178.00 ± 1.00	54.40 ± 0.50	13.00 ± 0.30
	(inch)	0.124 ± 0.004	0.109 ± 0.008	0.049 ± 0.004	0.063 ± 0.004	7.008 ± 0.039	2.142 ± 0.020	0.512 ± 0.012

SOT-23-3L	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	8.00 ± 0.10	11.90 ± 1.50
	(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	0.315 ± 0.004	0.469 ± 0.059

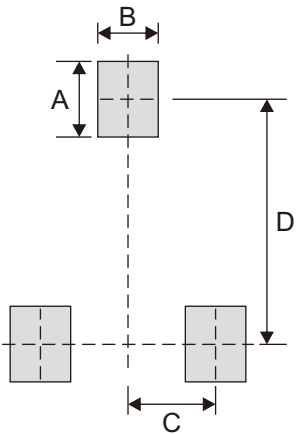
Marking Code

Part Number	Marking Code
CMS03N06TL-HF	S10.



Suggested P.C.B. PAD Layout

SIZE	SOT-23-3L	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.20	0.087



Standard Packaging

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