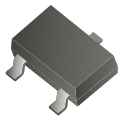
CMS01P10TA-HF

P-Channel
RoHS Device
Halogen Free



Features

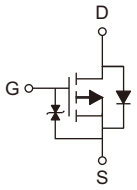
- Low on resistance.
- Low gate charge.
- Fast switching characteristic.
- ESD protected gate.

Mechanical data

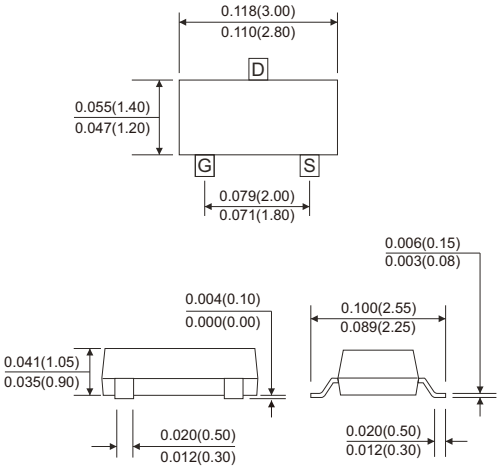
- Case: SOT-23, molded plastic.
- Mounting position: Any.

Circuit Diagram

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



SOT-23



Dimensions in inches and (millimeter)

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

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	-100	V
Gate source voltage	V_{GS}	±20	
Continuous drain current @V_{GS}= -10V, T_A=25°C (Note 1)	I_D	-0.9	A
Continuous drain current @V_{GS}= -10V, T_A=70°C (Note 1)	I_D	-0.7	
Pulsed drain current (Note 2)	I_{DM}	-3.6	
Continuous body diode forward current @T_A=25°C (Note 1)	I_S	-0.7	
ESD susceptibility (Note 3)	V_{ESD}	2000	V
Total power dissipation @T_A=25°C (Note 1)	P_D	0.9	W
Total power dissipation @T_A=70°C (Note 1)	P_D	0.6	
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C
Thermal resistance, junction to ambient (Note 1)	$R_{\theta JA}$	145	°C/W

Notes: 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

2. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

3. Human body model, 1.5kΩ in series with 100pF.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Drain source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-100			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1		-2.5	
Forward transconductance	g_{fs}	V_{DS} = -10V, I_D = -1A		2.5		S
Gate body leakage current	I_{GSS}	V_{GS} = ±16V, V_{DS} = 0V			±10	μA
Zero gate voltage drain current	I_{DSS}	V_{DS} = -80V, V_{GS} = 0V			-1	
Static drain source on-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -1A		440	600	mΩ
		V_{GS} = -4.5V, I_D = -0.5A		520	730	
Dynamic						
Input capacitance	C_{iss}	V_{DS} = -50V, V_{GS} = 0V, f = 1MHz		270		pF
Output capacitance	C_{oss}			20		
Reverse transfer capacitance	C_{rss}			21		
Gate resistance	R_g	f = 1MHz		5.4		Ω
Total gate charge (Note 1,2)	Q_g	V_{DS} = -50V, I_D = -1A, V_{GS} = -10V		6.6		nC
Gate source charge (Note 1,2)	Q_{gs}			1		
Gate drain charge (Note 1,2)	Q_{gd}			1.5		
Turn-on delay time (Note 1,2)	$t_{d(on)}$	V_{DS} = -50V, I_D = -1A, V_{GS} = -10V, R_{GS} = 6Ω		8.2		ns
Rise time (Note 1,2)	t_r			1.2		
Turn-off delay time (Note 1,2)	$t_{d(off)}$			21		
Fall time (Note 1,2)	t_f			1.8		
Source-Drain Diode						
Diode forward voltage (Note 1)	V_{SD}	I_S = -1A, V_{GS} = 0V		-0.82	-1.2	V
Body diode reverse recovery time	t_{rr}	I_F = -1A, dI_F/dt = 100A/μs		17		ns
Body diode reverse recovery charge	Q_{rr}			12		nC

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Independent of operating temperature.

Rating and Characteristic Curves (CMS01P10TA-HF)

Fig.1 - Typical Output Characteristics

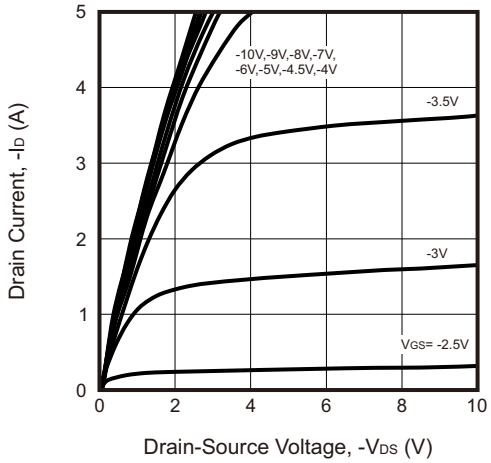


Fig.2 - Breakdown Voltage vs Ambient Temperature

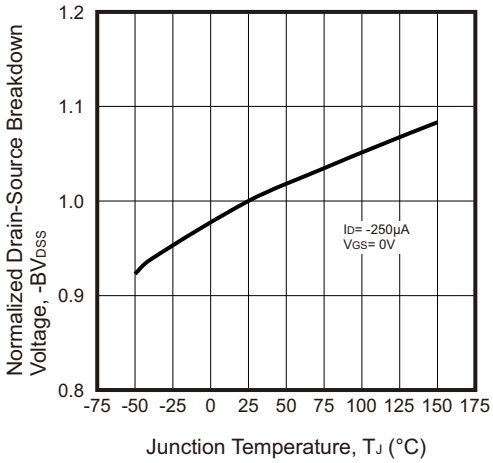


Fig.3 - Static Drain-Source On-State Resistance vs Drain Current

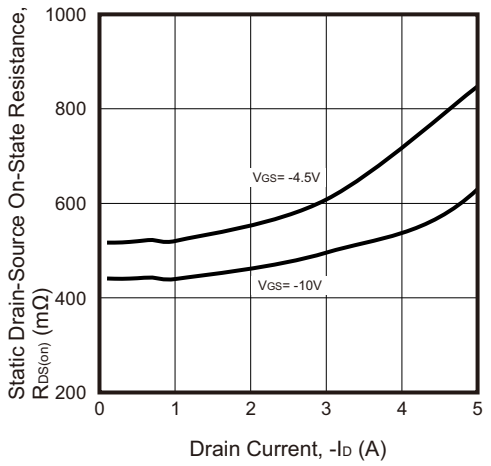


Fig.4 - Body Diode Current vs Source-Drain Voltage

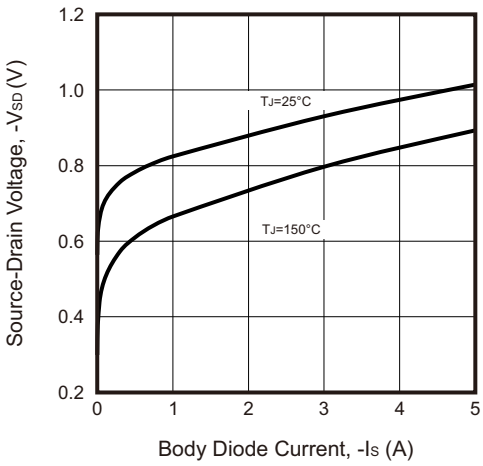


Fig.5 - Static Drain-Source On-State Resistance vs Gate-Source Voltage

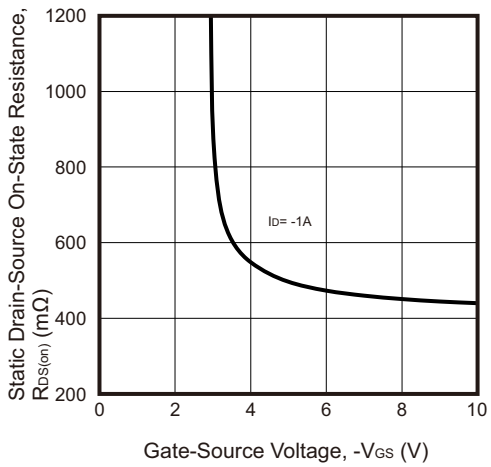
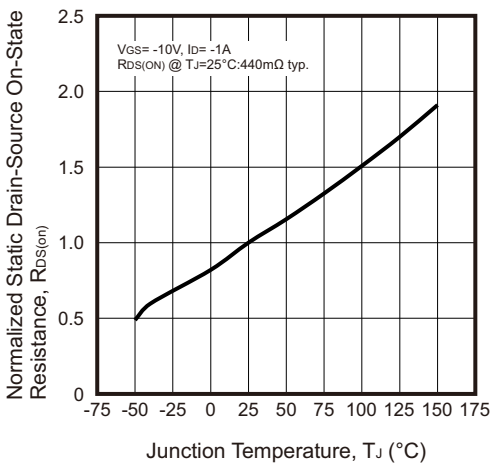


Fig.6 - Drain-Source On-State Resistance vs Junction Temperature



Rating and Characteristic Curves (CMS01P10TA-HF)

Fig.7 - Capacitance vs Drain-Source Voltage

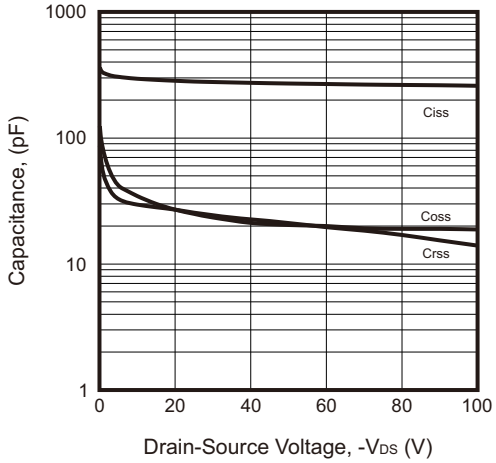


Fig.8 - Threshold Voltage vs Junction Temperature

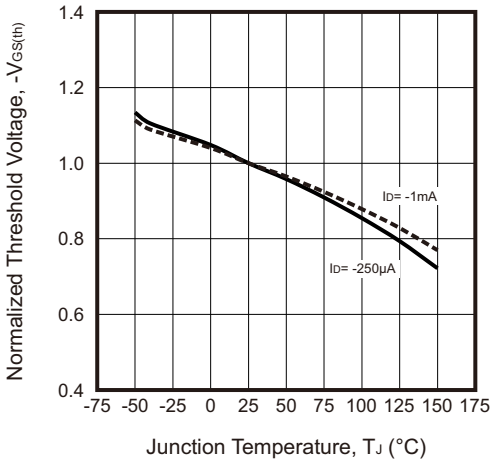


Fig.9 - Forward Transfer Admittance vs Drain Current

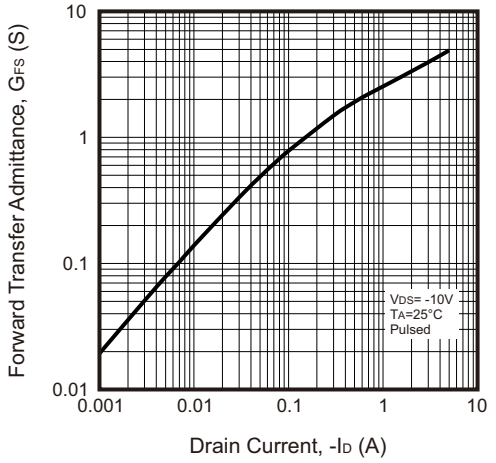


Fig.10 - Gate Charge Characteristics

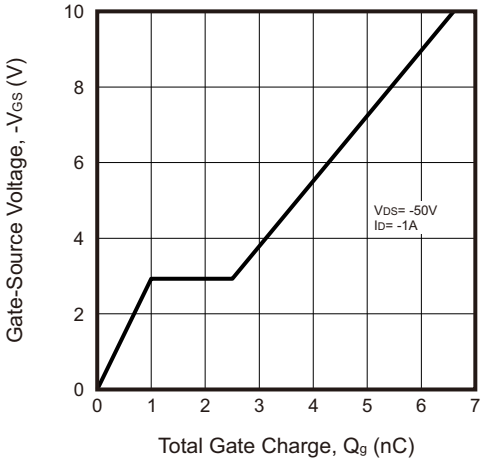


Fig.11 - Maximum Safe Operating Area

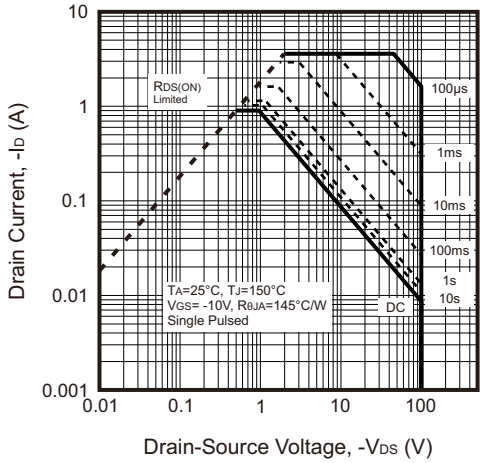
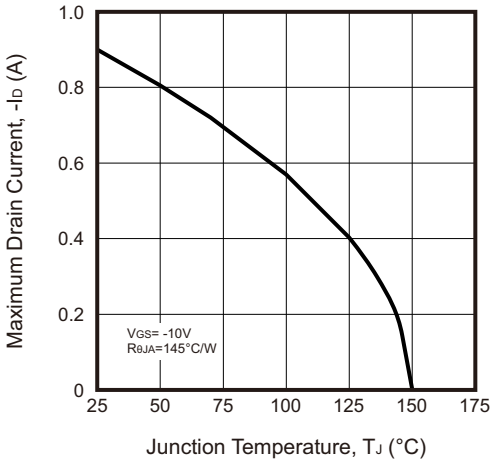
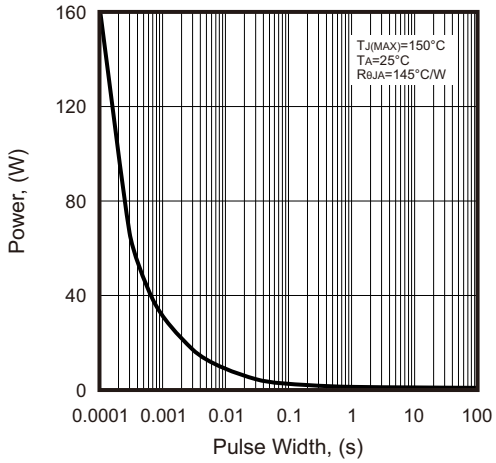


Fig.12 - Maximum Drain Current vs Junction Temperature

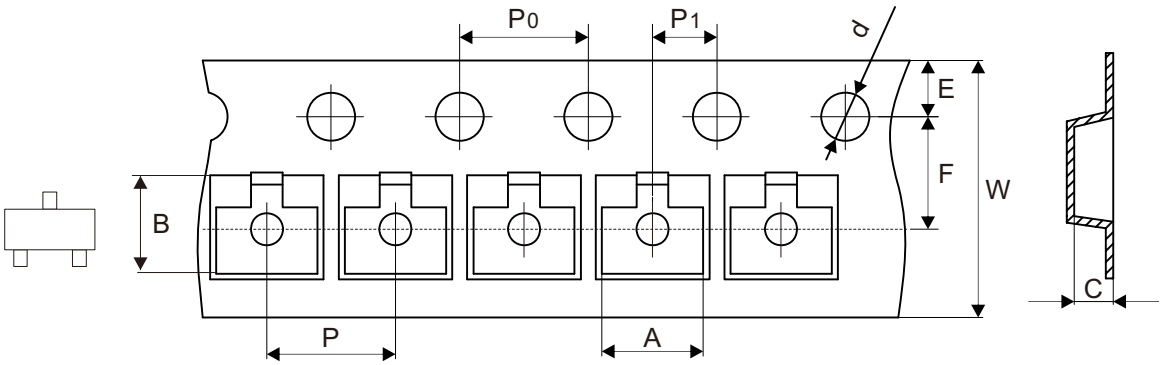


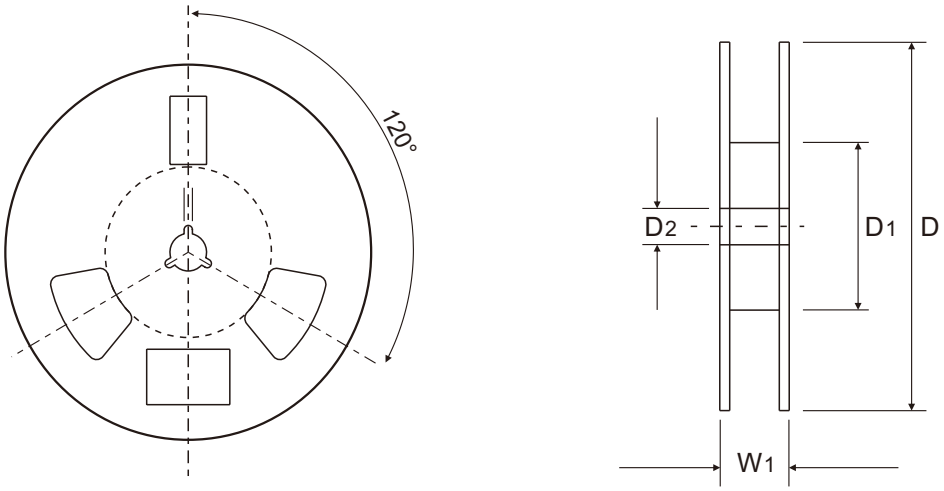
Rating and Characteristic Curves (CMS01P10TA-HF)

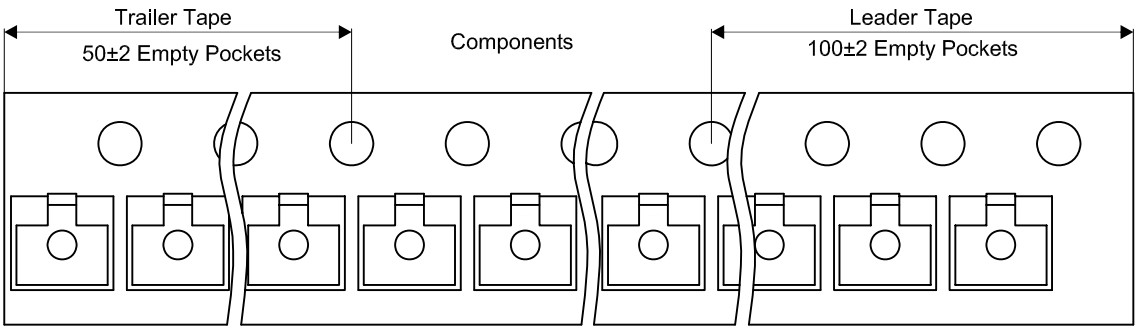
Fig.13 - Single Pulse Power Rating, Junction to Ambient



Reel Taping Specification







	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.17 ± 0.15	3.23 ± 0.12	1.37 ± 0.10	1.50 + 0.10	179.00 ± 2.00	60.00 ± 1.50	13.50 ± 0.50
	(inch)	0.125 ± 0.006	0.127 ± 0.005	0.054 ± 0.004	0.059 + 0.004	7.047 ± 0.079	2.362 ± 0.059	0.531 ± 0.020

	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	16.10 ± 0.60
	(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	0.634 ± 0.024