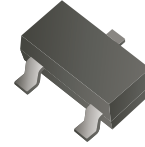


CMSP3415TA-P2-HF

P-Channel

RoHS Device

Halogen Free



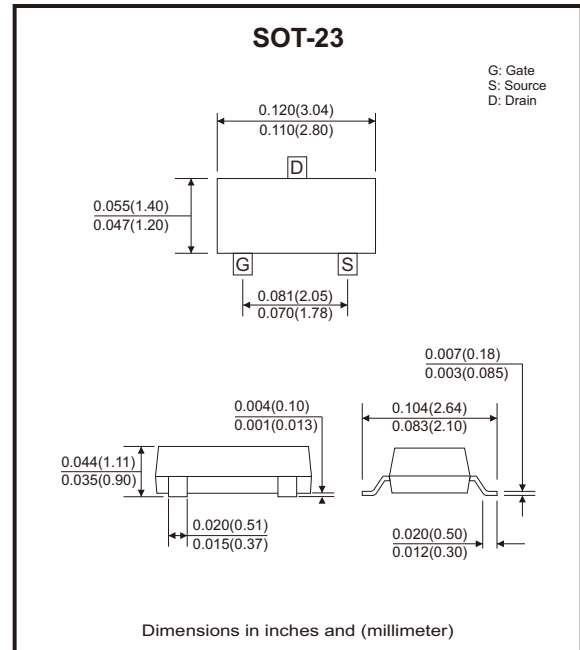
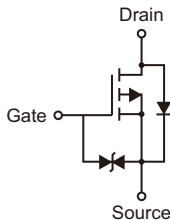
Features

- High density cell design for low $R_{DS(ON)}$.
- Voltage controlled small signal switch.
- Rugged and reliable.

Mechanical data

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

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}	± 10	V
Continuous drain current	I_D	-4	A
Pulsed drain current (Note 1)	I_{DM}	-30	A
Power dissipation	P_D	1.4	W
Thermal resistance from junction to ambient	$R_{\theta JA}$	89.3	$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes: 1. Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate threshold voltage (Note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.35	-0.55	-0.9	V
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$			± 10	μA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-source on-resistance (Note 1)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$		34	45	$m\Omega$
	$R_{DS(on)}$	$V_{GS} = -2.5V, I_D = -4A$		44	60	$m\Omega$
Forward transconductance (Note 1)	g_{fs}	$V_{DS} = -5V, I_D = -4A$	8			S
Diode forward current (Note 2)	I_S				-4	A
Diode forward voltage (Note 1)	V_{SD}	$V_{GS} = 0V, I_S = -4A$			-1.2	V
Dynamic Characteristics (Note 3)						
Input capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$		950		pF
Output capacitance	C_{oss}			165		
Reverse transfer capacitance	C_{rss}			120		
Total gate charge	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -4A$		12		nC
Gate to source charge	Q_{gs}			1.4		
Gate to drain charge	Q_{gd}			3.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V, R_L = 2.5\Omega, R_G = 3\Omega$		12		ns
Turn-on rise time	t_r			10		
Turn-off delay time	$t_{d(off)}$			19		
Turn-off fall time	t_f			25		

Notes: 1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 2. Surface mounted on FR4 board, $t \leq 10$ sec.
 3. Guaranteed by design, Not subject to production testing.

Typical Rating and Characteristic Curves (CMSP3415TA-P2-HF)

Fig.1 - Typical Output Characteristics

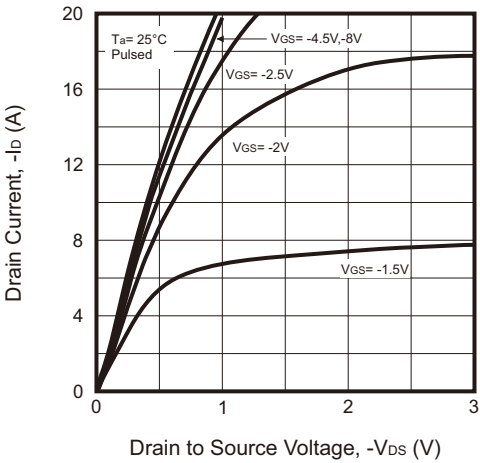


Fig.2 - Transfer Characteristics

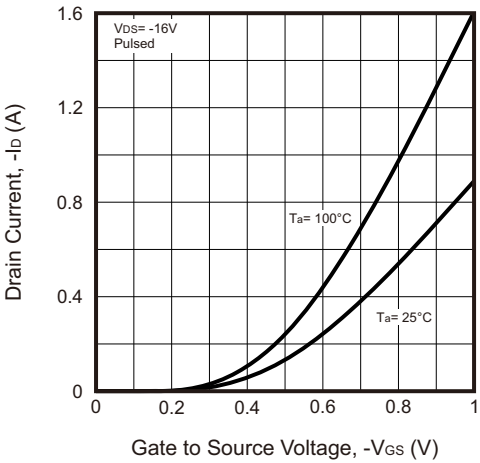


Fig.3 - On-Resistance vs. Drain Current

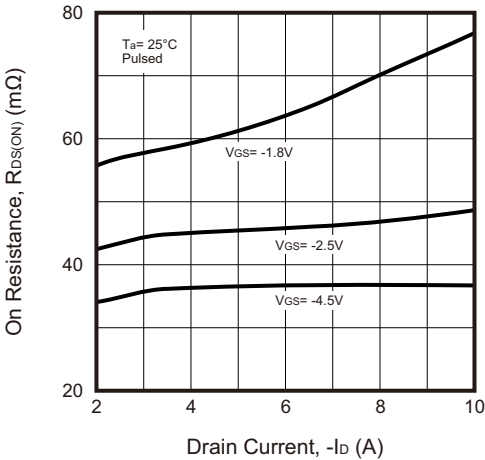


Fig.4 - On-Resistance vs. Gate to Source Voltage

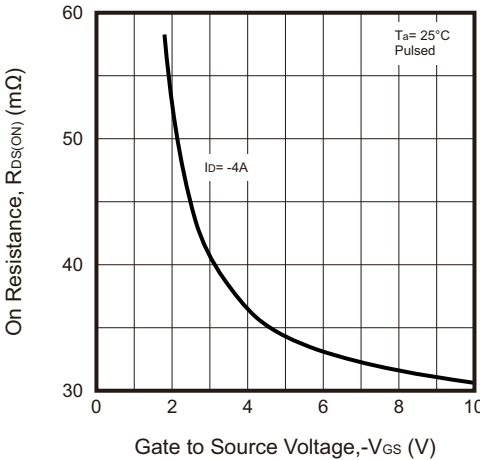


Fig.5 - I_S — V_{SD}

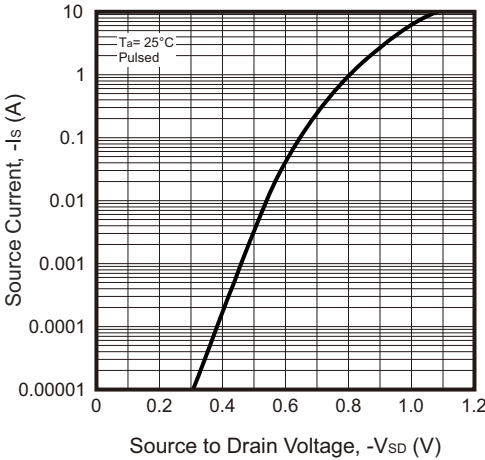
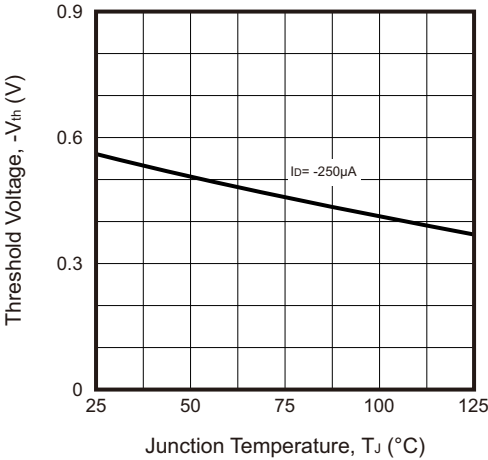
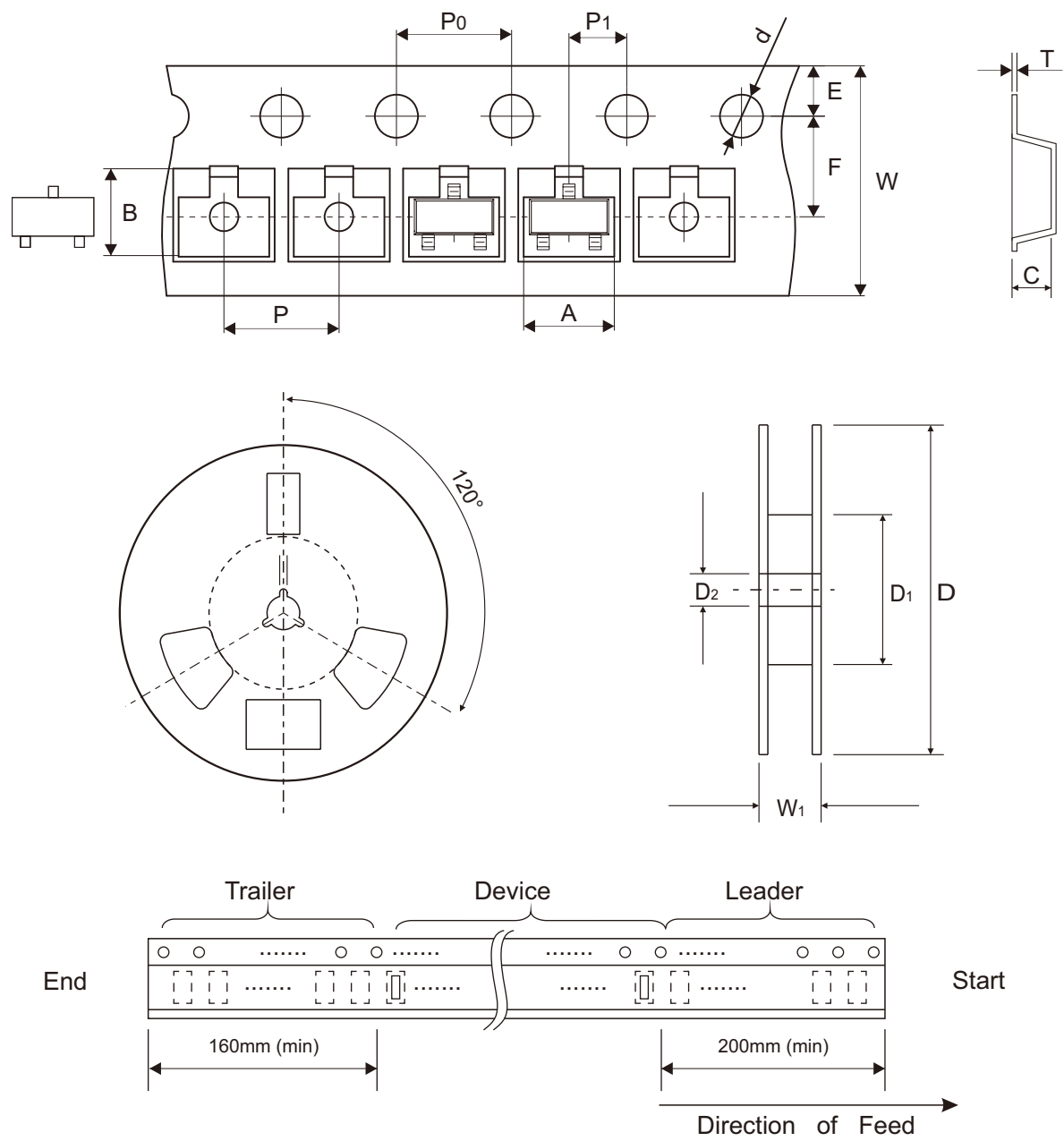


Fig.6 - Threshold Voltage Characteristics



Reel Taping Specification

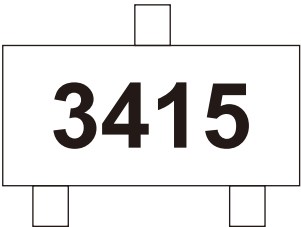


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 + 0.08 - 0.10	1.50 + 0.10 - 0.00	178.00 ± 2.00	50.00 ± 0.50	13.00 ± 0.25
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 + 0.003 - 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.079	1.969 ± 0.020	0.512 ± 0.010

SOT-23	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 ± 0.05	0.20 ± 0.02	8.00 + 0.30 - 0.10	9.50 ± 0.50
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.001	0.315 + 0.012 - 0.004	0.374 ± 0.020

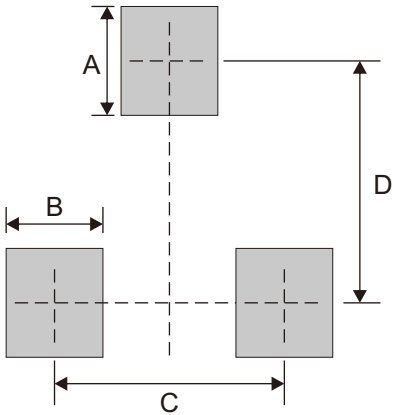
Marking Code

Part Number	Marking Code
CMSP3415TA-P2-HF	3415



Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	1.90	0.075
D	2.00	0.079



Standard Packaging

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