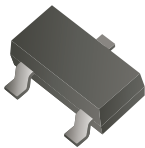


CMSP3401T-HF

P-Channel
RoHS Device
Halogen Free



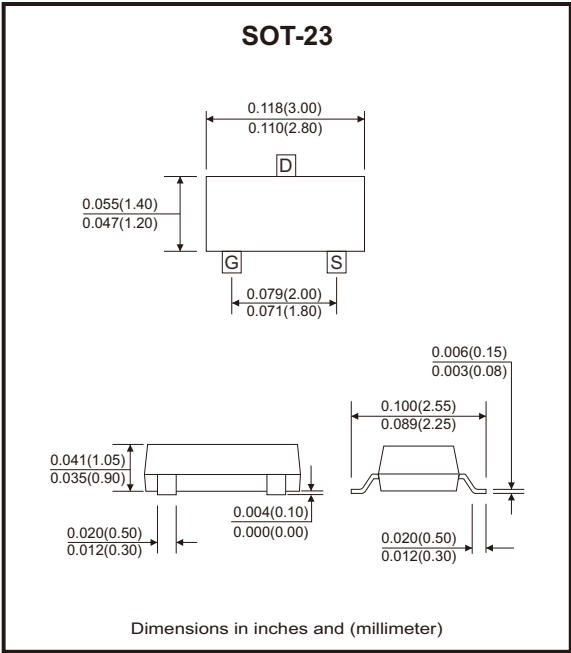
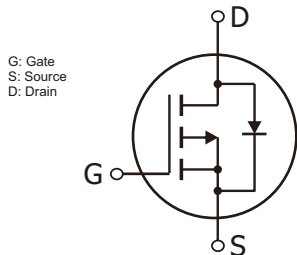
Features

- Fast switching.
- High density cell design for low $R_{DS(on)}$.
- Reliable and rugged.
- Low leakage current.

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}	-30	V
Gate-source voltage		V_{GS}	± 12	V
Continuous drain current	$T_A=25^{\circ}\text{C}$	I_D	-4.2	A
	$T_A=100^{\circ}\text{C}$	I_D	-3.5	
Maximum power dissipation	$T_A=25^{\circ}\text{C}$	P_D	1.4	W
	$T_A=100^{\circ}\text{C}$	P_D	0.9	
Pulsed drain current		I_{DM}	-30	A
Operating junction temperature		T_J	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 ambient	$R_{\theta JA}$		90		$^{\circ}\text{C/W}$
Thermal resistance junction to case	$R_{\theta JC}$		60		$^{\circ}\text{C/W}$

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	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±12V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.5	-0.8	-1.1	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -4A		40	60	mΩ
	R _{DS(on)}	V _{GS} = -4.5V, I _D = -3A		49	78	mΩ
Charges, Capacitances and Gate Resistance						
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		954		pF
Output capacitance	C _{oss}			115		
Reverse transfer capacitance	C _{rss}			77		
Gate resistance	R _g	f = 1MHz		6		Ω
Total gate charge	Q _g	V _{GS} = -4.5V, V _{DS} = -15V, I _D = -4A		9.4		nC
Gate to source charge	Q _{gs}			2		
Gate to drain charge	Q _{gd}			3		
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{GS} = -10V, V _{DS} = -15V, R _L = 3.6Ω, R _G = 6Ω		6.3		ns
Turn-on rise time	t _r			3.2		
Turn-off delay time	t _{d(off)}			38.2		
Turn-off fall time	t _f			12		
Body Diode Characteristics						
Diode forward voltage	V _{SD}	V _{GS} = 0V, I _S = -1A		-0.8	-1	V
Reverse recovery time	t _{rr}	V _{GS} = 0V, I _{SD} = -4A, dI/dt = 100A/μs		32		ns
Reverse recovery charge	Q _{rr}			11		nC

Typical Rating and Characteristic Curves (CMSP3401T-HF)

Fig.1 - On-Region Characteristics

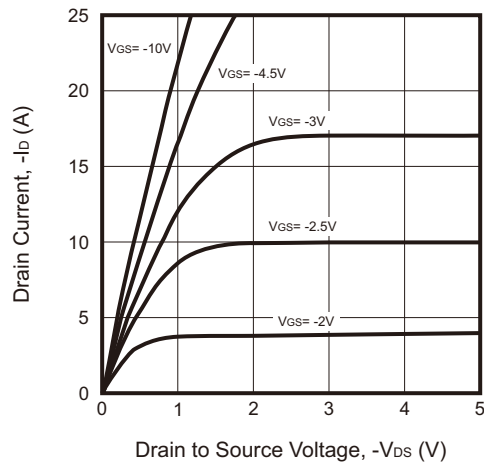


Fig.2 - Transfer Characteristics

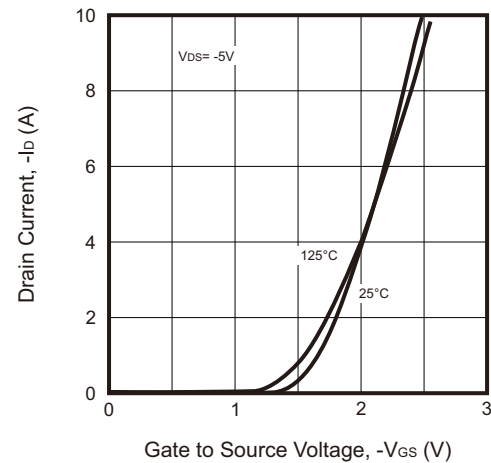


Fig.3 - On-Resistance vs. Drain Current and Gate Voltage

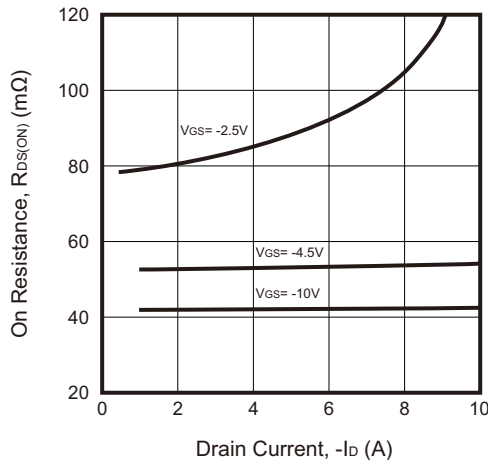


Fig.4 - On-Resistance vs. Junction Temperature

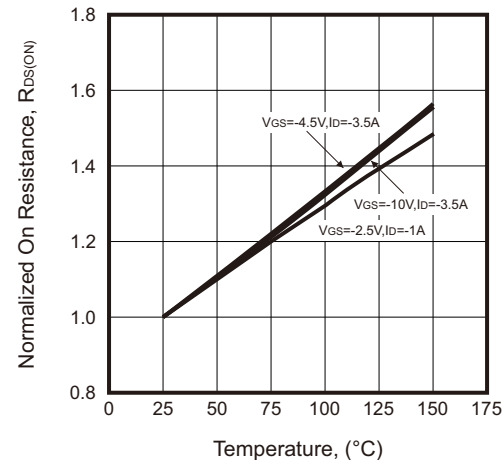


Fig.5 - On-Resistance vs. Gate-Source Voltage

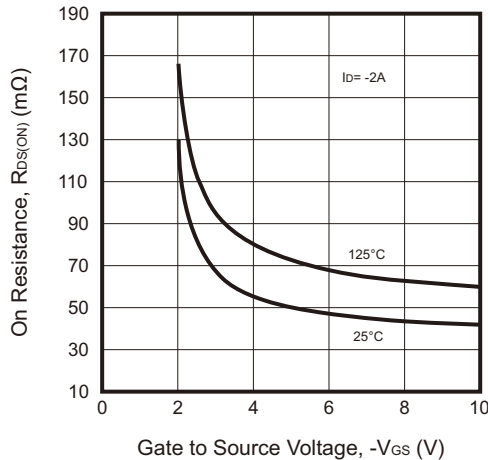
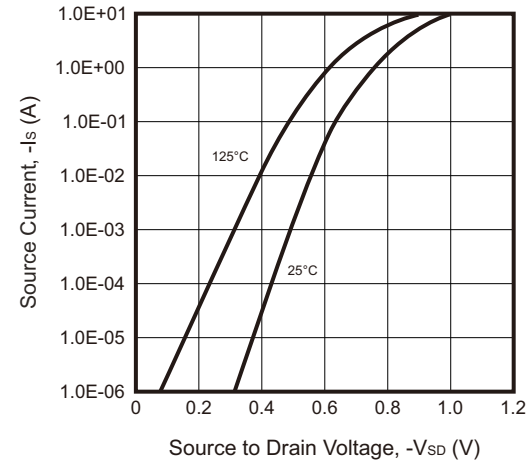


Fig.6 - Body-Diode Characteristics



Typical Rating and Characteristic Curves (CMSP3401T-HF)

Fig.7 - Gate Charge Characteristics

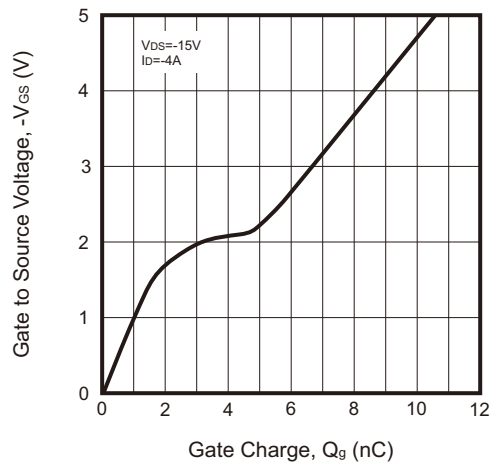


Fig.8 - Capacitance Characteristics

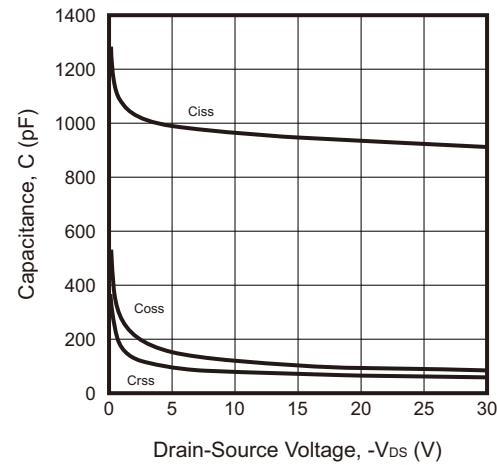


Fig.9 - Maximum Forward Biased Safe Operating Area

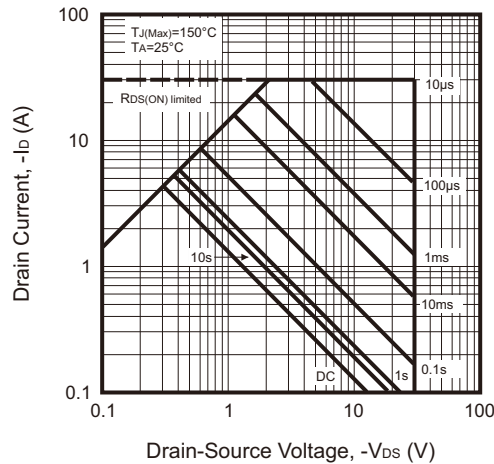
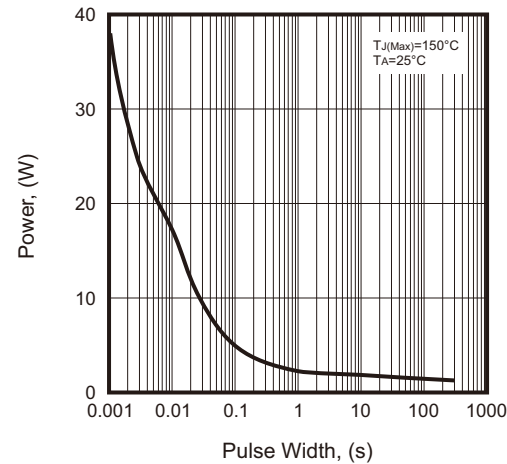
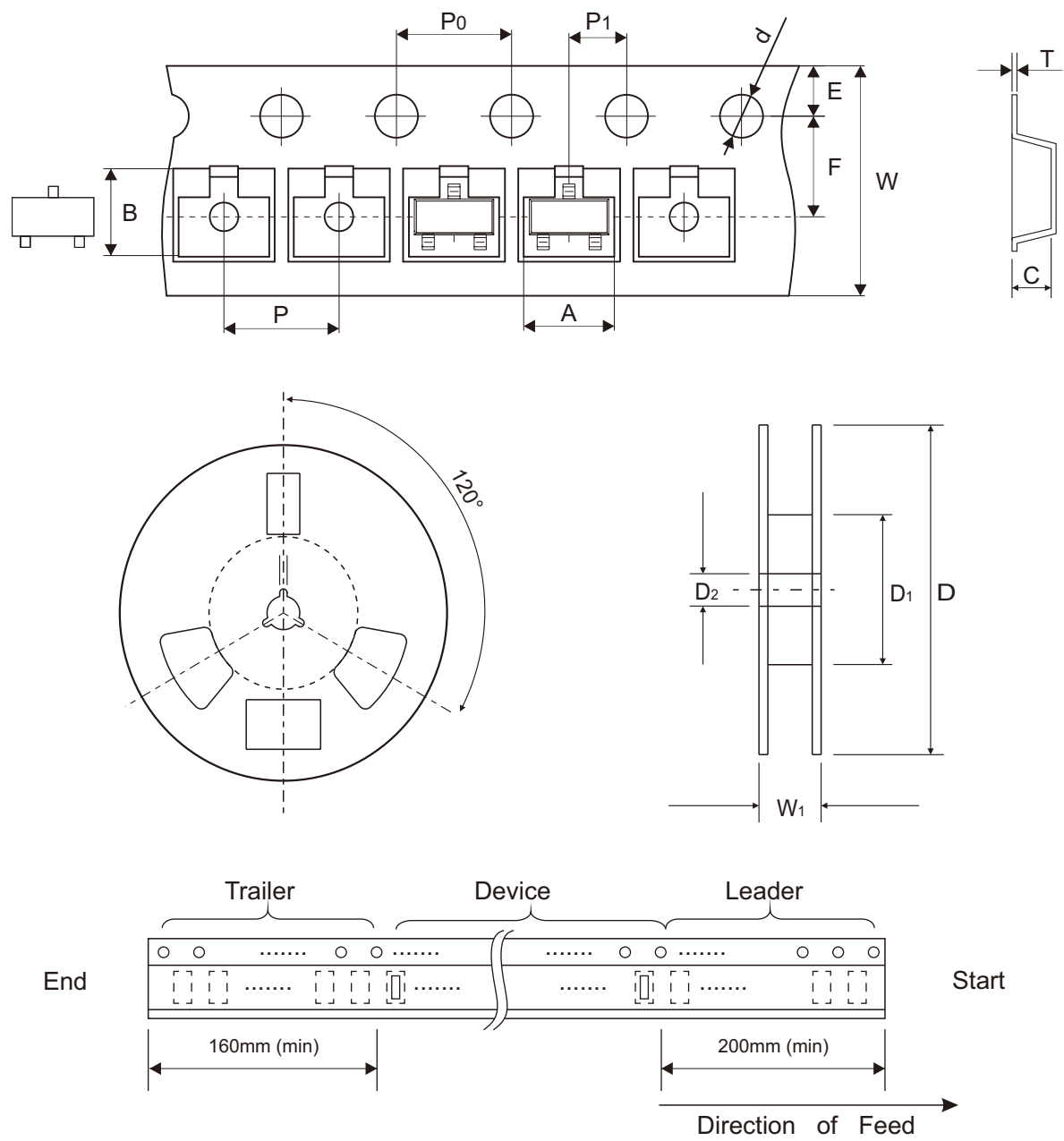


Fig.10 - Single Pulse Power Rating Junction to Ambient



Reel Taping Specification

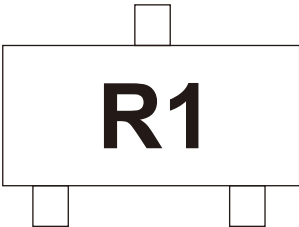


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.76 ± 0.10	1.25 ± 0.10	1.60 ± 0.10	178.00 ± 1.00	54.40 ± 0.40	13.00 ± 0.20
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.049 ± 0.004	0.063 ± 0.004	7.008 ± 0.039	2.142 ± 0.016	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.20 ± 0.02	8.00 ± 0.10	12.30 ± 0.20
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.008 ± 0.001	0.315 ± 0.004	0.484 ± 0.008

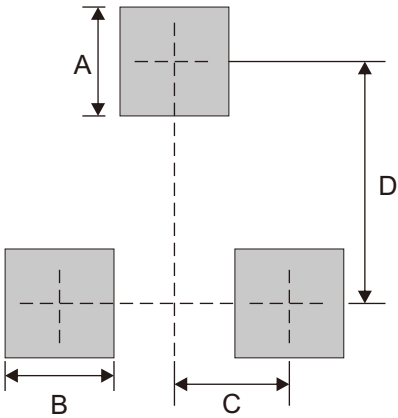
Marking Code

Part Number	Marking Code
CMSP3401T-HF	R1



Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.80	0.031
C	0.95	0.037
D	2.40	0.094



Standard Packaging

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