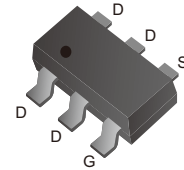


CMSP3407T6-HF

P-Channel

RoHS Device

Halogen Free



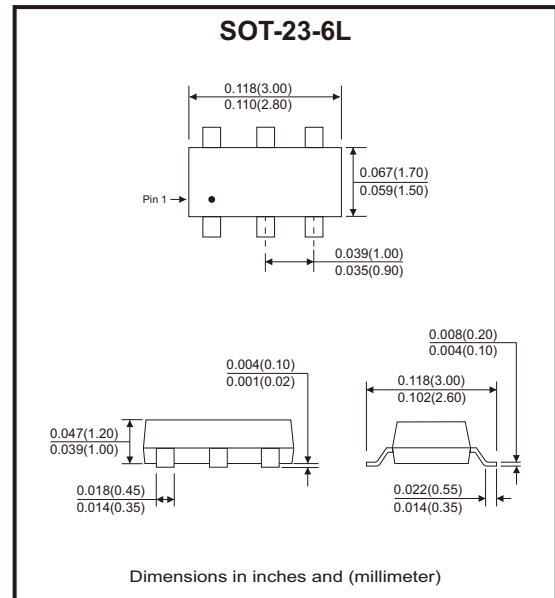
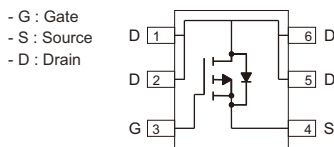
Features

- High-speed switching.
- Drive circuits can be simple.
- Parallel use is easy.

Mechanical data

- Case: SOT-23-6L, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin-plated leads, solderable per MIL-STD-202, method 208.

Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current (TA=25°C) (Note 1)	I_D	-4.3	A
Continuous drain current (TA=70°C) (Note 1)	I_D	-3.5	
Pulsed drain current (tp=10μs, TA=25°C)	I_{DM}	-20	A
Single pulse avalanche energy (Note 3)	E_{AS}	12	mJ
Power dissipation (TA=25°C)	P_D	1.4	W
Power dissipation (TC=25°C)	P_D	3	W
Operating junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Thermal resistance junction to case (Note 1)	$R_{\theta JC}$		30	40	°C/W
Thermal resistance junction to air (Note 1)	$R_{\theta JA}$		70	90	°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	V _{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 _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics						
Static drain-source on-resistance (Note 2)	R _{DS(on)}	V _{GS} = -10V, I _D = -4.1A		40	52	mΩ
	R _{DS(on)}	V _{GS} = -4.5V, I _D = -3A		59	87	mΩ
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2.1	V
Gate resistance	R _G	V _{GS} = 0V, f = 1MHz		12		Ω
Dynamic Characteristics						
Forward transconductance	g _{FS}	V _{DS} = -5V, I _D = -4A		7		S
Input capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz		793		pF
Output capacitance	C _{oss}			78		
Reverse transfer capacitance	C _{rss}			61		
Switching Characteristics						
Turn-on delay time (Note 4)	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V R _G = 2.5Ω, R _L = 15Ω, I _D = -1A		5		ns
Turn-on rise time (Note 4)	t _r			6		
Turn-off delay time (Note 4)	t _{d(off)}			28		
Turn-off fall time (Note 4)	t _f			7		
Total gate charge	Q _g	V _{DD} = -20V, V _{GS} = -4.5V, I _D = -3A		8		nC
Gate to source charge	Q _{gs}			2.6		
Gate to drain (miller) charge	Q _{gd}			2.6		
Source-Drain Diode Characteristics						
Diode forward voltage (Note 2)	V _{SD}	I _{SD} = -1A, V _{GS} = 0V, T _J = 25°C		-0.8	-1.0	V
Reverse recovery time	t _{rr}	I _{SD} = -3A, V _{GS} = 0V, dI/dt = 100A/μs		125		ns
Reverse recovery charge	Q _{rr}			110		nC

Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

3. The EAS data shows max. rating. The test condition is $V_{DD}=-15\text{V}, V_{GS}=-10\text{V}, L=0.1\text{mH}$.

4. Guaranteed by design, not subject to production.

Typical Rating and Characteristic Curves (CMSP3407T6-HF)

Fig.1 - Typical Output Characteristics

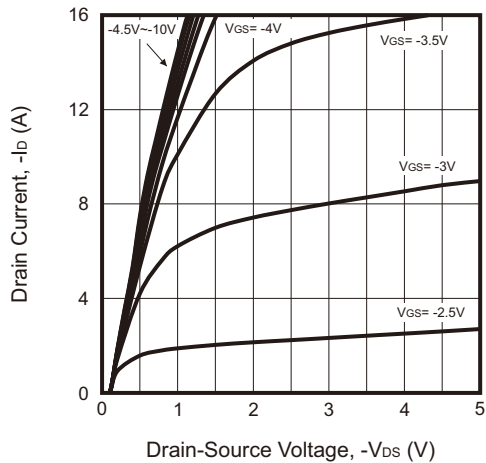


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

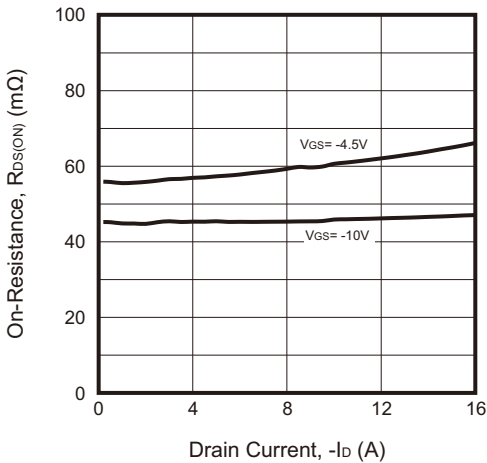


Fig.3 - On-Resistance vs. Gate-Source Voltage

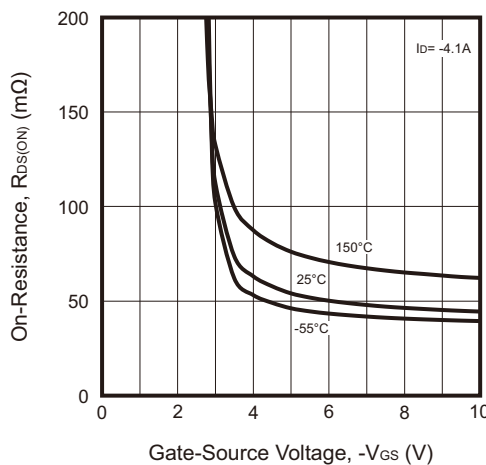


Fig.4 - Body-Diode Characteristics

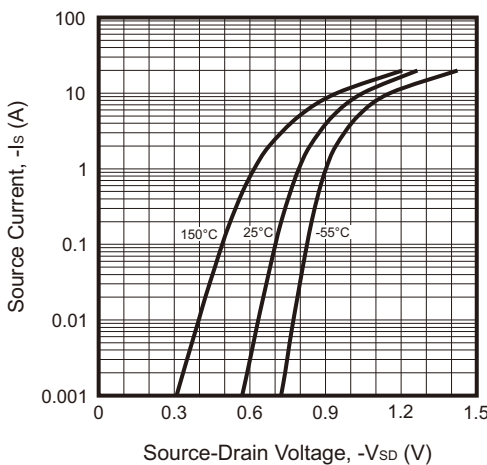


Fig.5 - Normalized On-Resistance vs. Junction Temperature

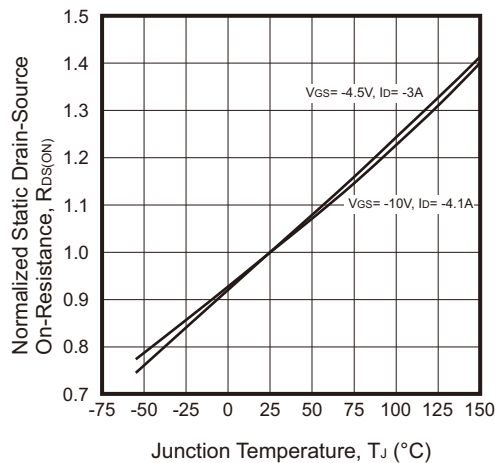
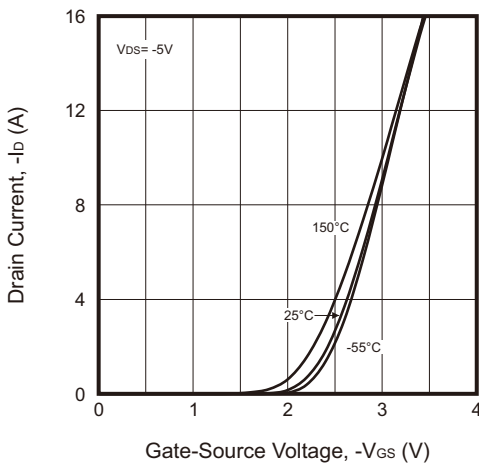


Fig.6 - Transfer Characteristics



Typical Rating and Characteristic Curves (CMSP3407T6-HF)

Fig.7 - Capacitance Characteristics

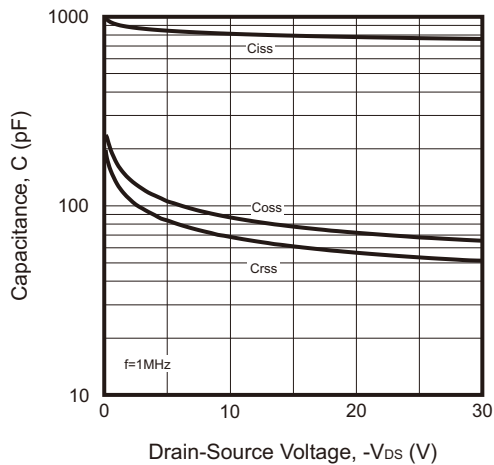


Fig.8 - Gate Charge Characteristics

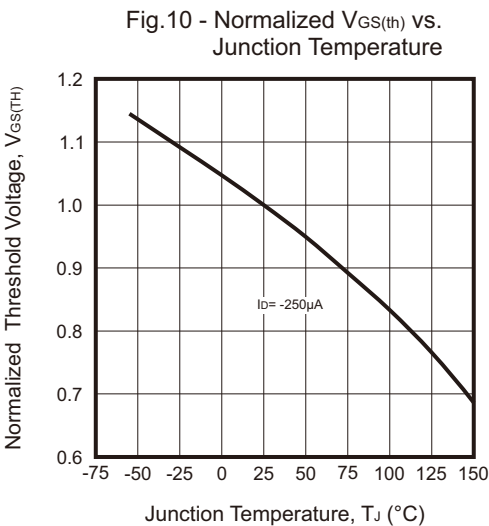
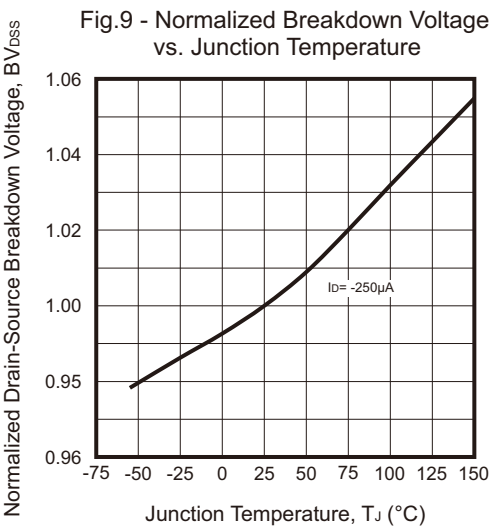
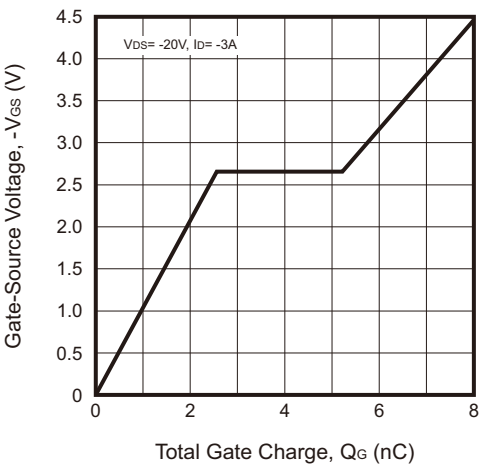
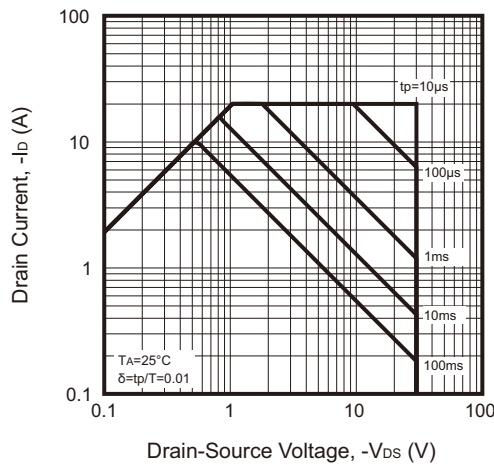
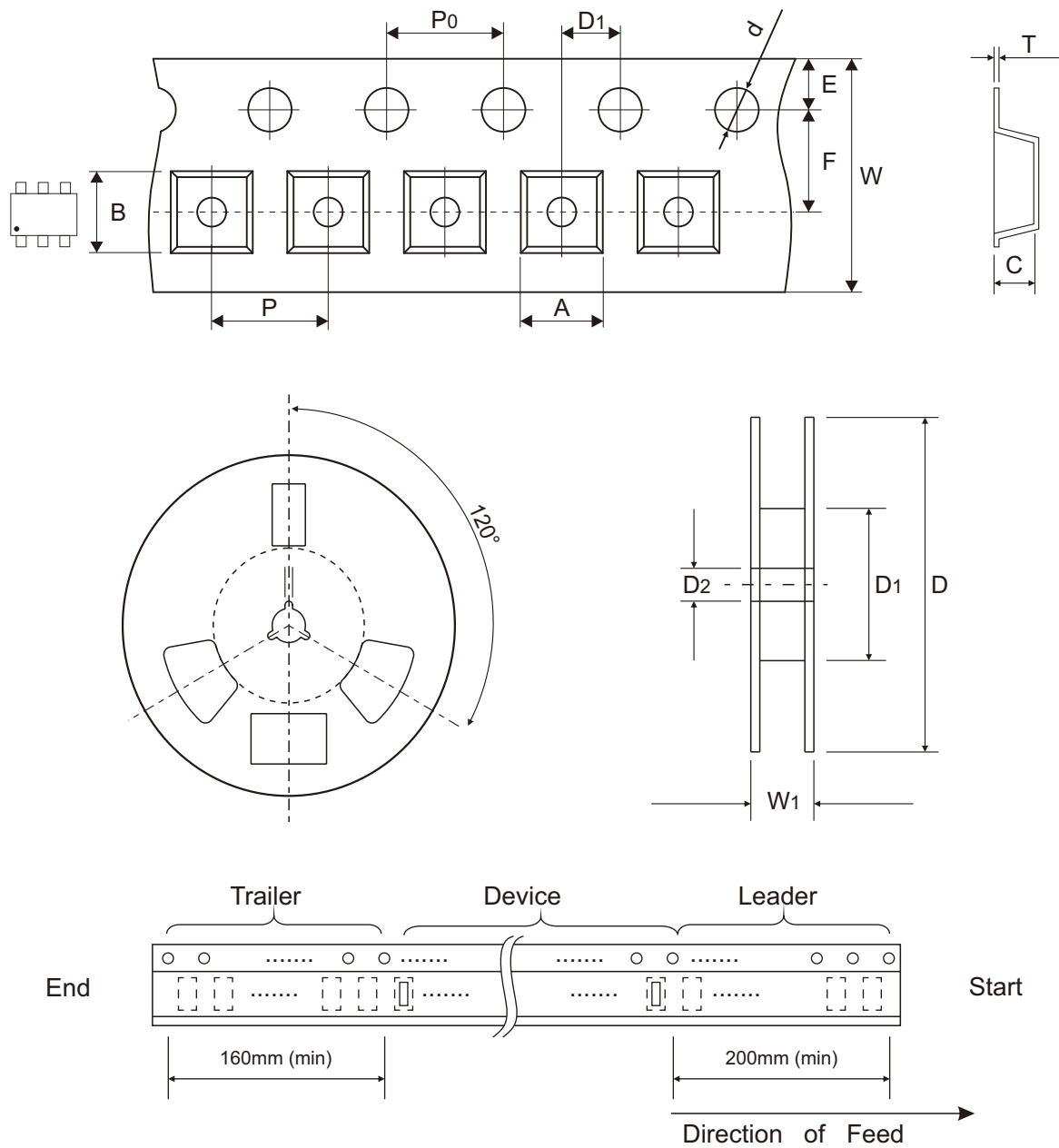


Fig.11 - Safe Operating Area



Reel Taping Specification

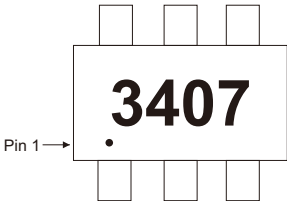


SOT-23-6L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.17 ± 0.10	3.23 ± 0.10	1.45 ± 0.10	1.50 + 0.10 - 0.00	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.125 ± 0.004	0.127 ± 0.004	0.057 ± 0.004	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

SOT-23-6L	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	0.25 ± 0.03	8.00 + 0.30 - 0.10	12.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.010 ± 0.001	0.315 + 0.012 - 0.004	0.492 ± 0.039

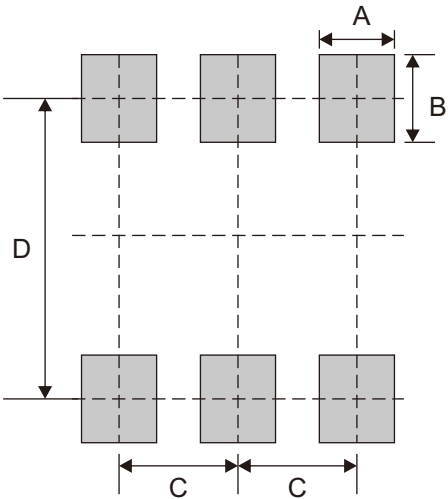
Marking Code

Part Number	Marking Code
CMSP3407T6-HF	3407



Suggested P.C.B. PAD Layout

SIZE	SOT-23-6L	
	(mm)	(inch)
A	0.60	0.024
B	0.70	0.028
C	0.95	0.037
D	2.40	0.094



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-23-6	3,000	7