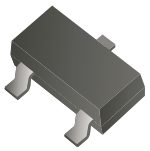
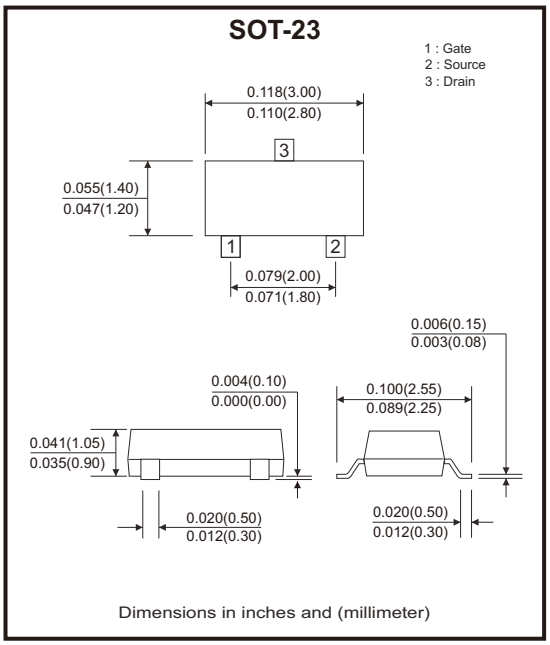
CMSP3139KT-HF

P-Channel
RoHS Device
Halogen Free



Features

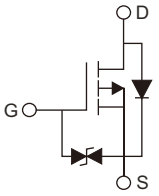
- Surface mount package.
- P-Channel switch with Low $R_{DS(on)}$.
- Operated at low logic level gate dive.



Mechanical data

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

Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-20	V
Typical gate-source voltage	V_{GS}	±12	V
Continuous drain current (Note 1)	I_D	-0.66	A
Pulsed drain current @tp=10μs	I_{DM}	-1.2	A
Power dissipation (Note 1)	P_D	350	mW
Thermal resistance, junction to ambient (Note 1)	$R_{\theta JA}$	357	°C/W
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C
Lead temperature for soldering purpose (1/8" duration for 10s)	T_L	260	°C

Electrical Characteristics (at Ta=25°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	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±20	μA
Gate threshold voltage (Note 2)	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.35	-0.45	-1.1	V
Drain-source on-state resistance (Note 2)	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -1A		430	520	mΩ
		V_{GS} = -2.5V, I_D = -0.8A		624	700	
		V_{GS} = -1.8V, I_D = -0.5A		950		
Forward transconductance (Note 2)	g_{fs}	V_{DS} = -10V, I_D = -0.54A		1.2		S
Drain forward voltage	V_{SD}	I_S = -0.5A, V_{GS} = 0V			-1.2	V
Dynamic characteristics (Note 4)						
Input capacitance	C_{iss}	V_{DS} = -16V, V_{GS} = 0V, f = 1MHz		113	170	pF
Output capacitance	C_{oss}			15	25	
Reverse transfer capacitance	C_{rss}			9	15	
Switching characteristics (Note 4)						
Turn-on delay time (Note 3)	$t_{d(on)}$	V_{GS} = -4.5V, V_{DS} = -10V I_D = -200mA, R_{GEN} = 10Ω		9		nS
Turn-on rise time (Note 3)	t_r			5.8		
Turn-off delay time (Note 3)	$t_{d(off)}$			32.7		
Turn-off fall time (Note 3)	t_f			20.3		

Notes: 1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse width = 300μs, duty cycle = 2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to production.

Typical Rating and Characteristic Curves (CMSP3139KT-HF)

Fig.1 - Output Characteristics

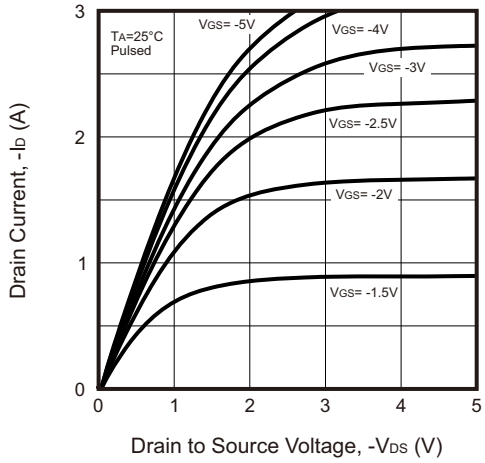


Fig.2 - Transfer Characteristics

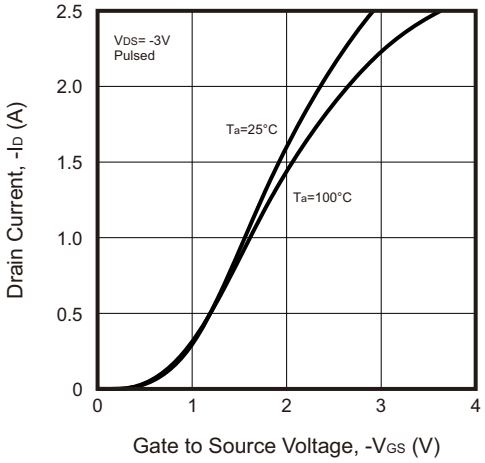


Fig.3 - $R_{DS(ON)}$ — I_D

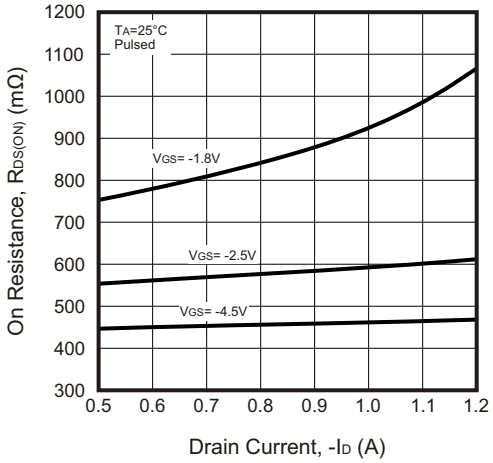


Fig.4 - On-Resistance vs. Gate to Source Voltage

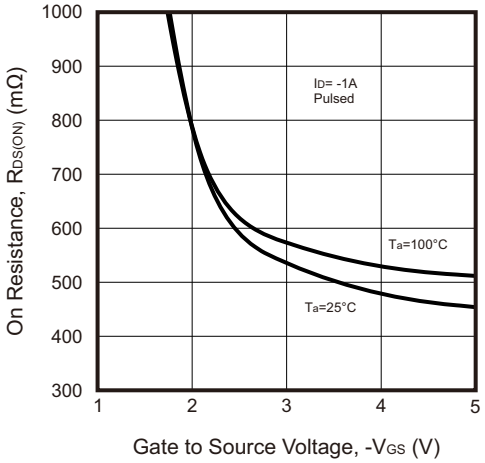


Fig.5 - I_S — V_{SD}

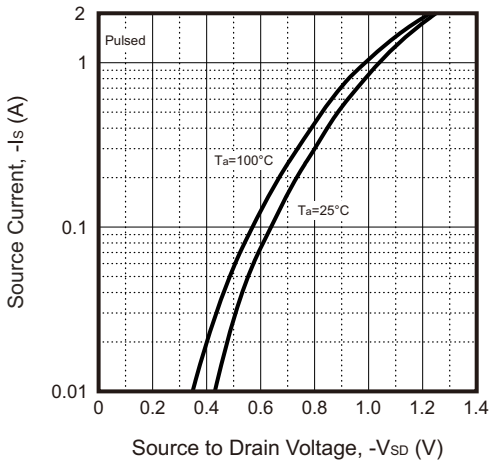
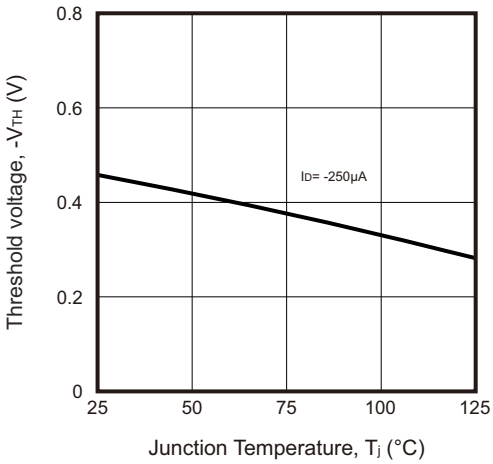
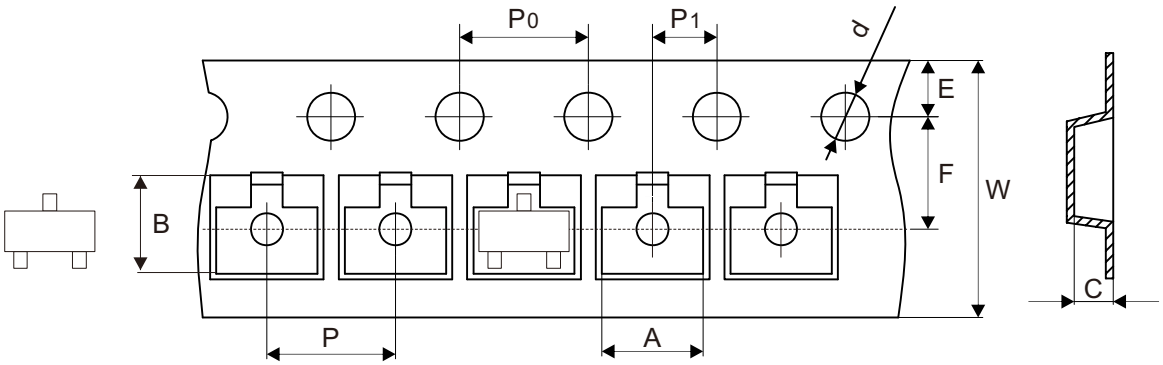
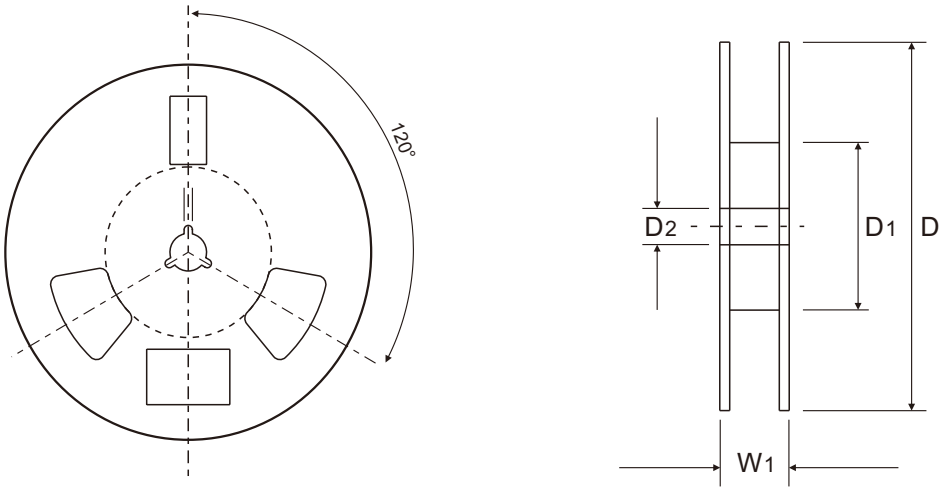


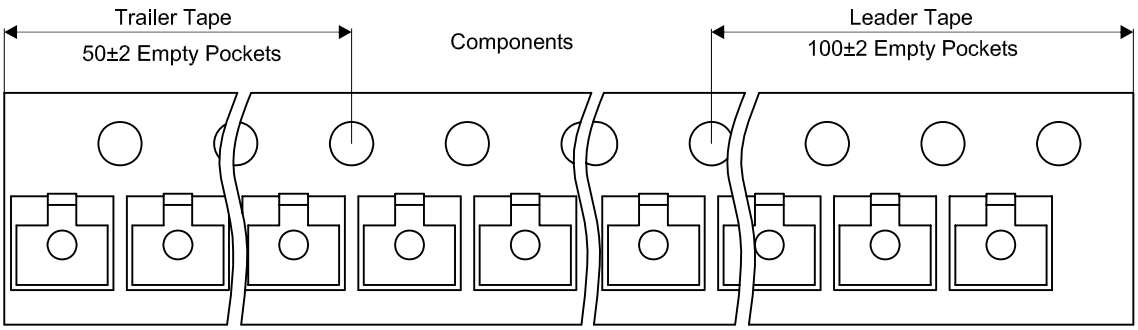
Fig.6 - Threshold Voltage



Reel Taping Specification





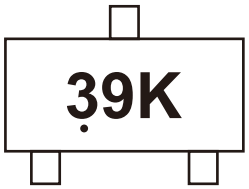


	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 + 0.10 − 0.00	178.00 ± 1.00	54.40 ± 0.40	13.00 ± 0.20
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 + 0.004 − 0.000	7.008 ± 0.039	2.142 ± 0.016	0.512 ± 0.008

	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	12.10 ± 1.00
	(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	0.476 ± 0.039

Marking Code

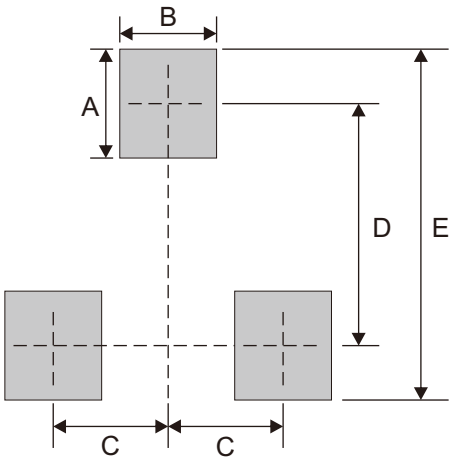
Part Number	Marking Code
CMSP3139KT-HF	39K



Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.90	0.035
B	0.80	0.031
C	0.95	0.037
D	2.00	0.079
E	2.90	0.114



Standard Packaging

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