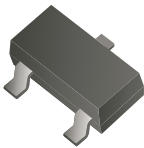


ACMS2312-HF

N-Channel
RoHS Device
Halogen Free



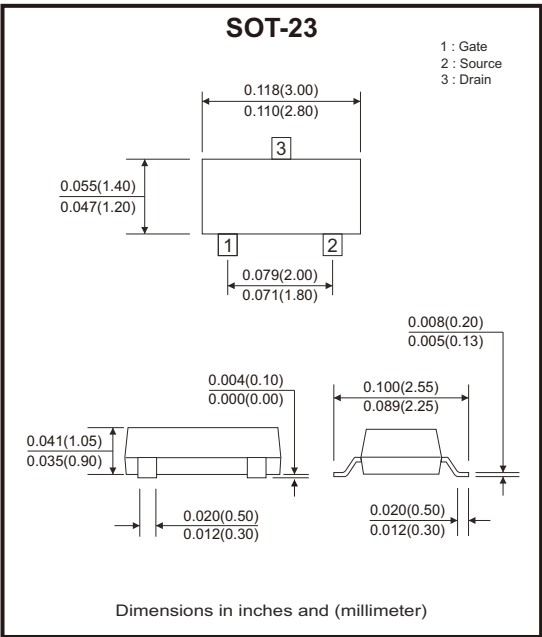
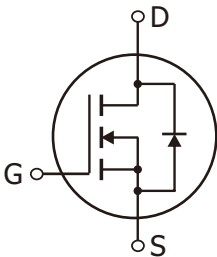
Features

- Trench FET power MOSFET.
- Load switching for portable applications.
- AEC-Q101 Qualified.

Mechanical data

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

Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V _{DS}	20	V
Gate-source voltage	V _{GS}	±8	V
Continuous drain current	I _D	5	A
Pulsed drain current (Note 1)	I _{DM}	20	A
Continuous source-drain diode current	I _S	1.04	A
Power dissipation	P _D	0.35	W
Thermal resistance, junction to ambient @t ≤ 5s (Note 2)	R _{θJA}	357	°C/W
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. These parameters have no way to verify.

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	V _{(BR)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} = ±8V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.45	0.7	1	V
Forward transconductance (Note 1)	g _{fs}	V _{DS} = 10V, I _D = 5A		6		S
Drain forward voltage	V _{SD}	I _S = 4A, V _{GS} = 0V		0.75	1.2	V
Drain-source on-state resistance (Note 1)	R _{DS(on)}	V _{GS} = 4.5V, I _D = 5A		0.018	0.0318	Ω
		V _{GS} = 2.5V, I _D = 4.7A		0.023	0.0356	
		V _{GS} = 1.8V, I _D = 4.3A		0.03	0.0414	
Dynamic characteristics (Note 2)						
Input capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		865		pF
Output capacitance	C _{oss}			105		
Reverse transfer capacitance	C _{rss}			55		
Gate resistance	R _g	f = 1MHz	0.5		0.48	Ω
Switching parameters (Note 2)						
Turn-on delay time	t _{d(on)}	V _{DD} = 10V, I _D = 4A V _{GEN} = 5V, R _G = 1Ω, R _L = 2.2Ω			10	nS
Turn-off delay time	t _{d(off)}				32	
Rise time	t _r				20	
Fall time	t _f				12	

Notes: 1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2. These parameters have no way to verify.

Typical Rating and Characteristic Curves (ACMS2312-HF)

Fig.1 - Output Characteristics

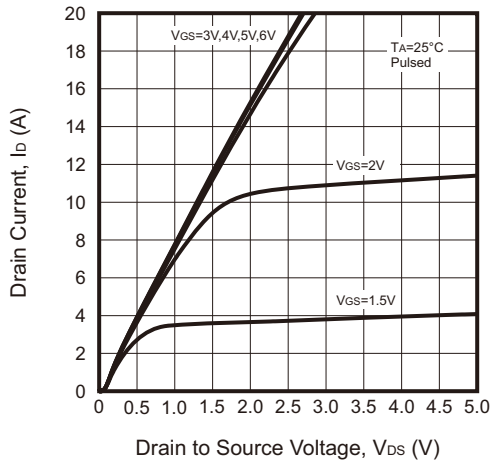


Fig.2 - Transfer Characteristics

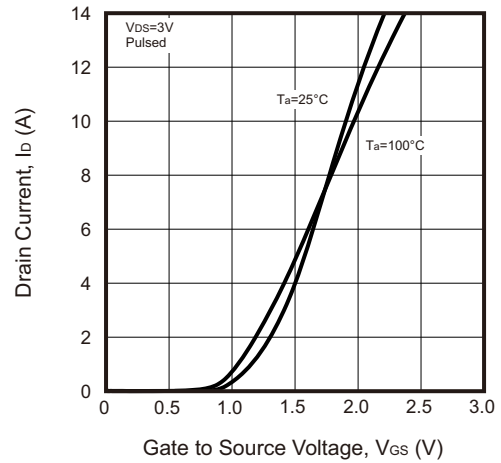


Fig.3 - $R_{DS(ON)}$ — I_D

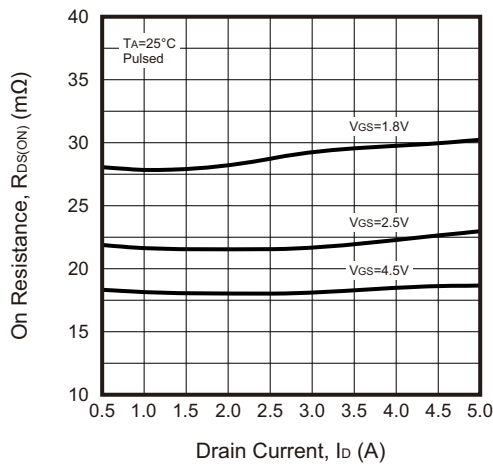


Fig.4 - On-Resistance vs. Gate to Source Voltage

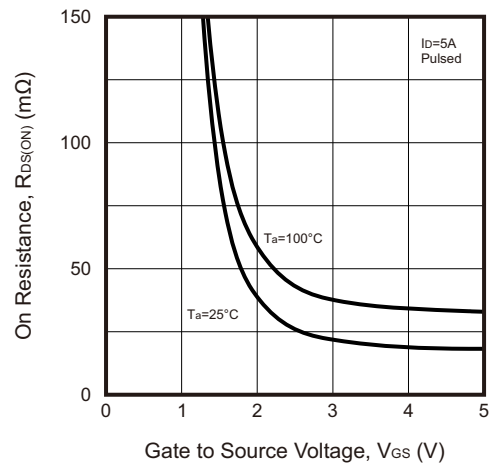


Fig.5 - I_S — V_{SD}

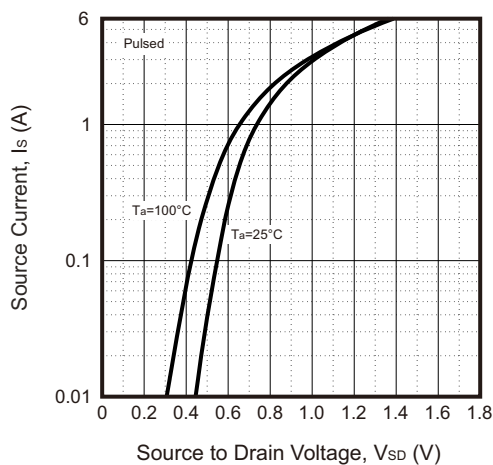
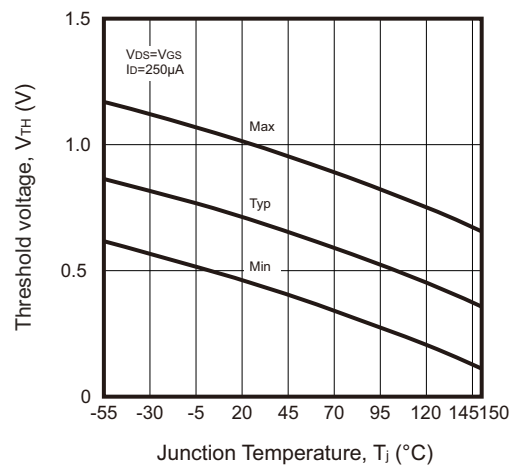
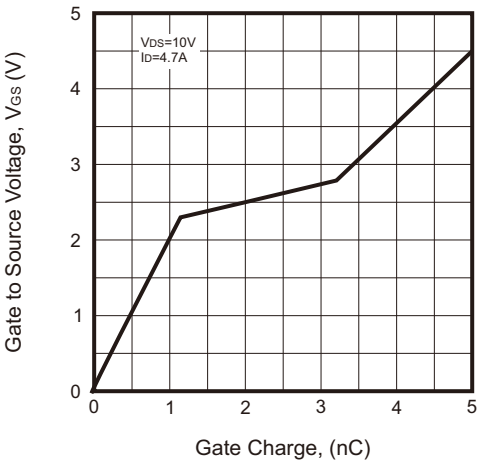


Fig.6 - Threshold Voltage

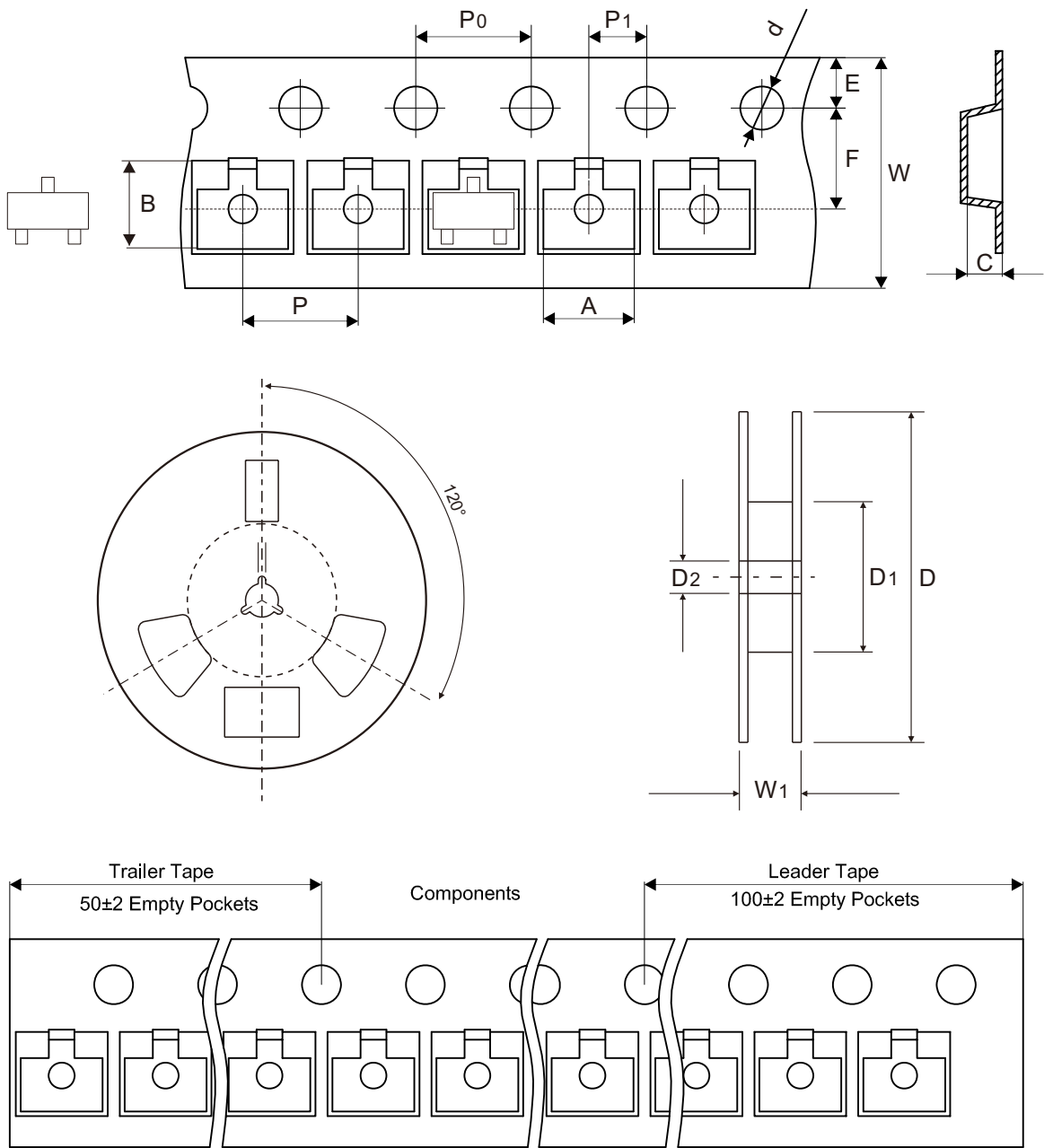


Typical Rating and Characteristic Curves (ACMS2312-HF)

Fig.7 - Gate Charge



Reel Taping Specification

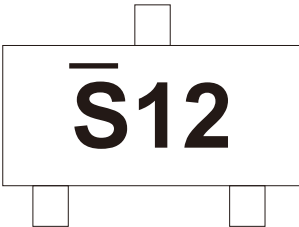


SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 + 0.10	178.00 ± 1.00	54.40 ± 0.40	13.00 ± 0.20
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 + 0.004	7.008 ± 0.039	2.142 ± 0.016	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(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

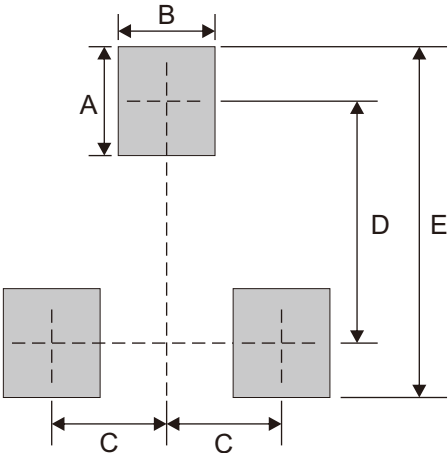
Marking Code

Part Number	Marking Code
ACMS2312-HF	S12



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