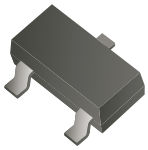
MOSFET

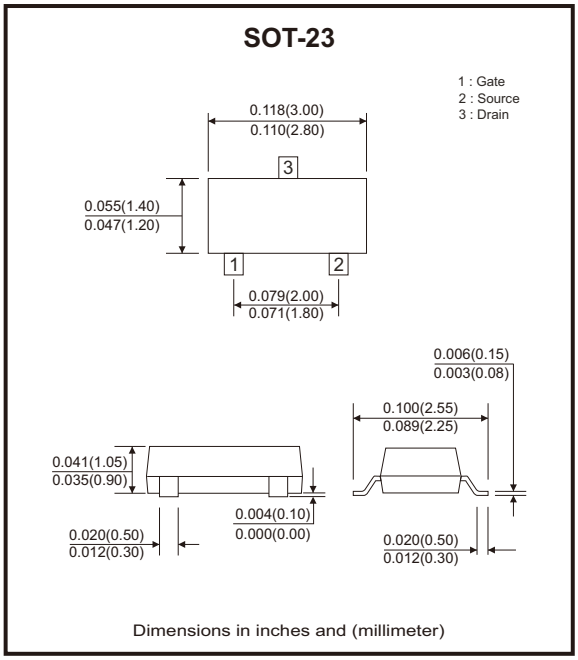
ACMSN3404-HF

N-Channel
RoHS Device
Halogen Free



Features

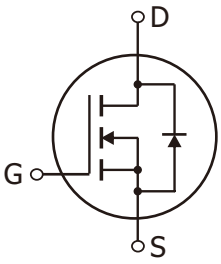
- Advanced trench process technology.
- Low threshold voltage.
- Fast switching speed.
- AEC-Q101 Qualified.



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°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	I_D	5.8	A
Pulsed drain current, pulsed	I_{DM}	64	A
Power dissipation (Note 2)	P_D	1.25	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 lead	$R_{\theta JL}$			80	°C/W
Thermal resistance junction to ambient (Note 2)	$R_{\theta JA}$			100	°C/W

Notes: 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

2. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

Electrical Characteristics (at T_A=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	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 4A		20	25	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3A		30	42	mΩ
Dynamic Characteristics						
Gate resistance	R_G	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz			2.8	Ω
Input capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		373		pF
Output capacitance	C_{oss}			67		
Reverse transfer capacitance	C_{rss}			41		
Total gate charge	Q_g	V_{DS} = 15V, I_D = 5.8A , V_{GS} = 10V		7.1		nC
		V_{DS} = 15V, I_D = 5.8A , V_{GS} = 4.5V		3.3		nC
Gate to source charge	Q_{gs}	V_{DS} = 15V, I_D = 5.8A , V_{GS} = 10V		1.4		nC
Gate to drain charge	Q_{gd}			1.7		
Turn-on delay time	$t_{d(on)}$	V_{DS} = 15V, R_L = 2.6Ω, R_{GEN} = 3Ω V_{GS} = 0V		4.5		ns
Turn-on rise time	t_r			2.4		
Turn-off delay time	$t_{d(off)}$			14.8		
Turn-off fall time	t_f			2.5		
Body-Diode Parameters						
Diode forward voltage	V_{SD}	I_S = 1A, V_{GS} = 0V			1	V
Reverse recovery time	t_{rr}	I_F = 5.8A, d_I/d_t = 100A/μs, V_R = 30V		10.5		ns
Reverse recovery change	Q_{rr}			4.5		nC

Typical Rating and Characteristic Curves (ACMSN3404-HF)

Fig.1 - On-Region Characteristics

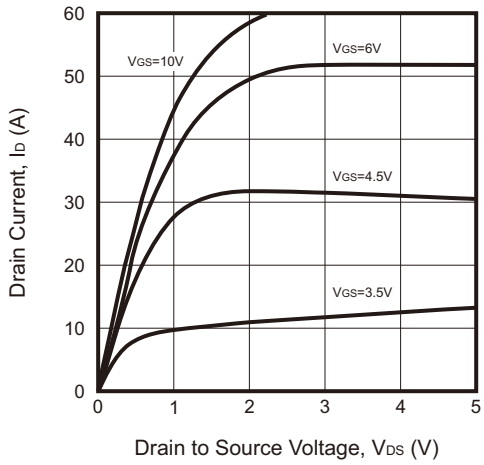


Fig.2 - Transfer Characteristics

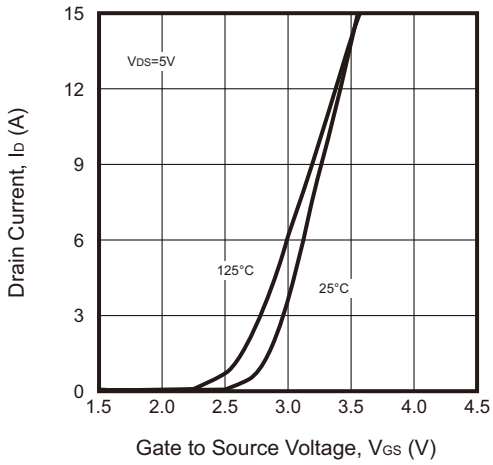


Fig.3 - $R_{DS(ON)}$ — I_D

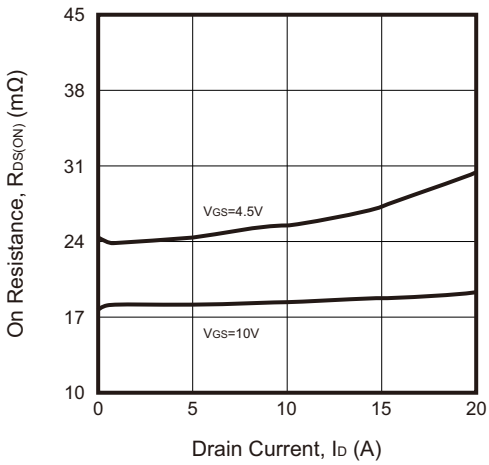


Fig.4 - On-Resistance vs. Junction Temperature

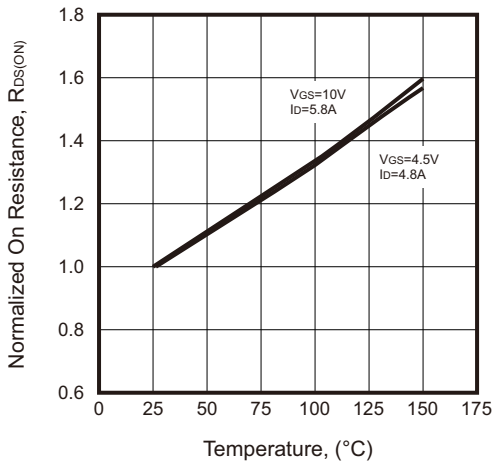


Fig.5 - On-Resistance vs. Gate to Source Voltage

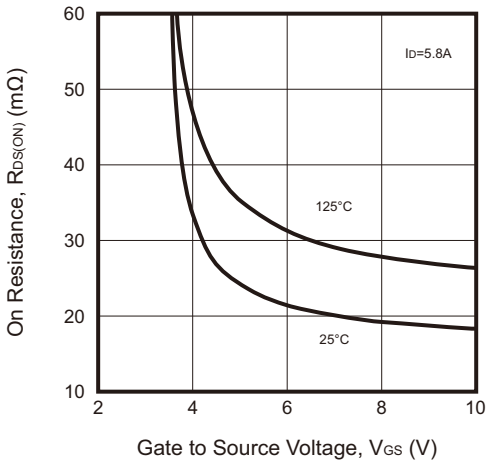
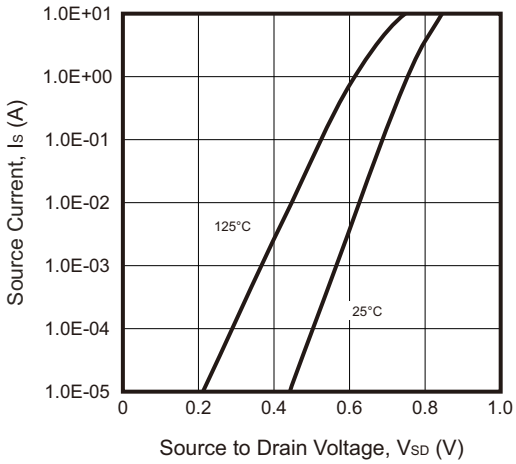


Fig.6 - Body-Diode Characteristics



Typical Rating and Characteristic Curves (ACMSN3404-HF)

Fig.7 - Gate Charge Characteristics

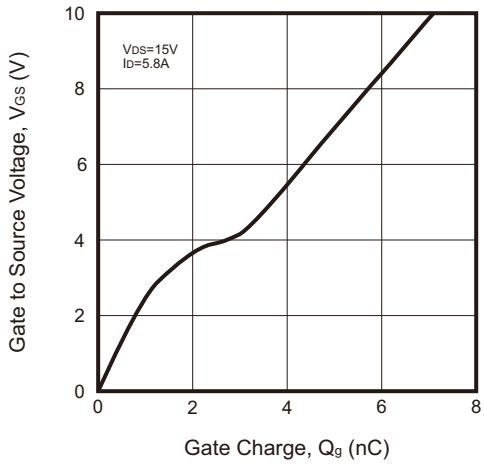


Fig.8 - Capacitance Characteristics

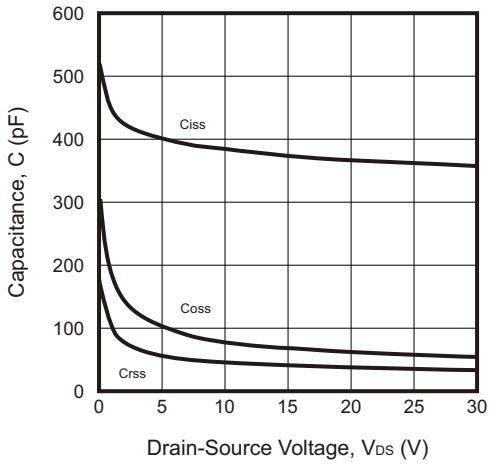


Fig.9 - Maximum Forward Biased Safe Operating Area

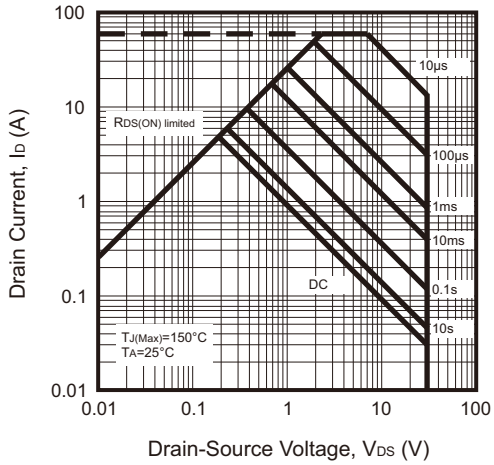
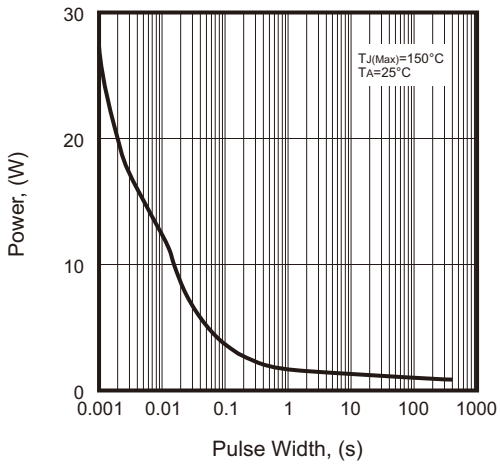
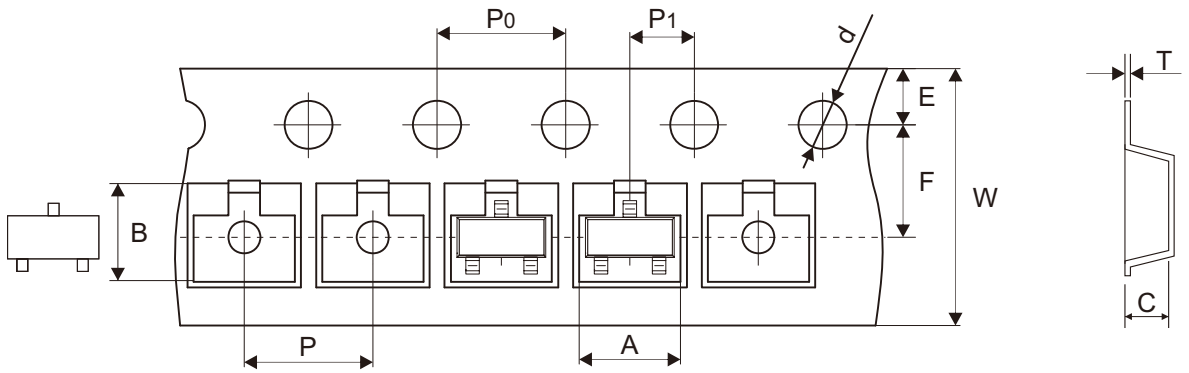
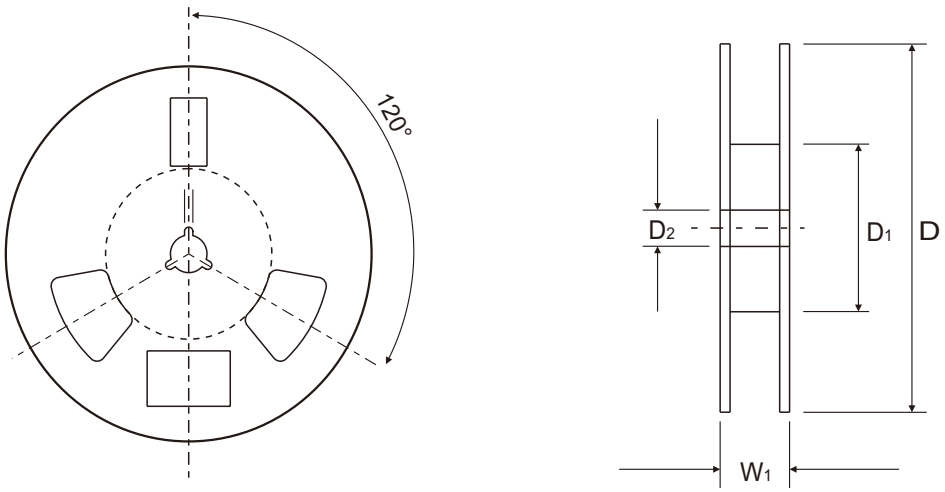


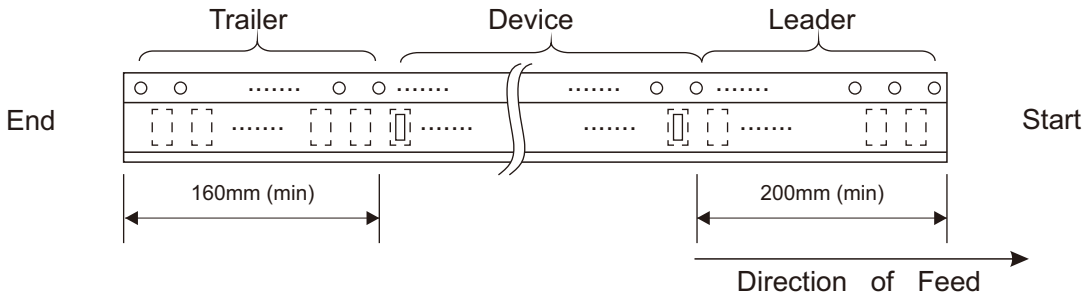
Fig.10 - Single Pulse Power Rating Junction to Ambient



Reel Taping Specification





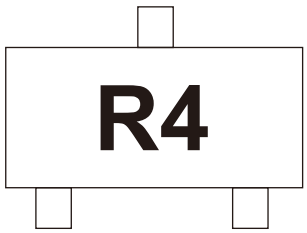


	SYMBOL	A	B	C	d	D	D1	D2
SOT-23	(mm)	3.08 ± 0.10	2.72 ± 0.10	1.22 ± 0.10	1.55 ± 0.05	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.121 ± 0.004	0.107 ± 0.004	0.048 ± 0.004	0.061 ± 0.002	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	T	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	0.20 ± 0.05	8.00 + 0.30 − 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.002	0.315 + 0.012 − 0.004	0.484 ± 0.039

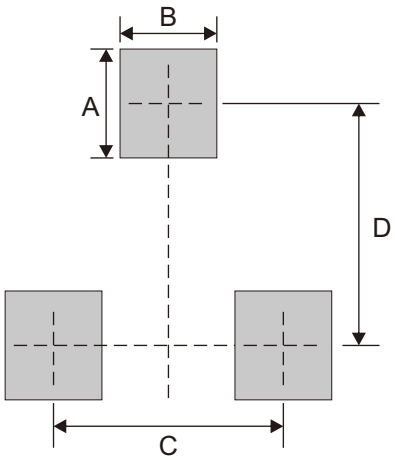
Marking Code

Part Number	Marking Code
ACMSN3404-HF	R4



Suggested P.C.B. PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.60	0.024
C	1.90	0.075
D	2.02	0.080



Standard Packaging

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