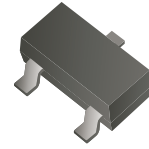


# ACMSP2303T-HF

P-Channel  
RoHS Device  
Halogen Free



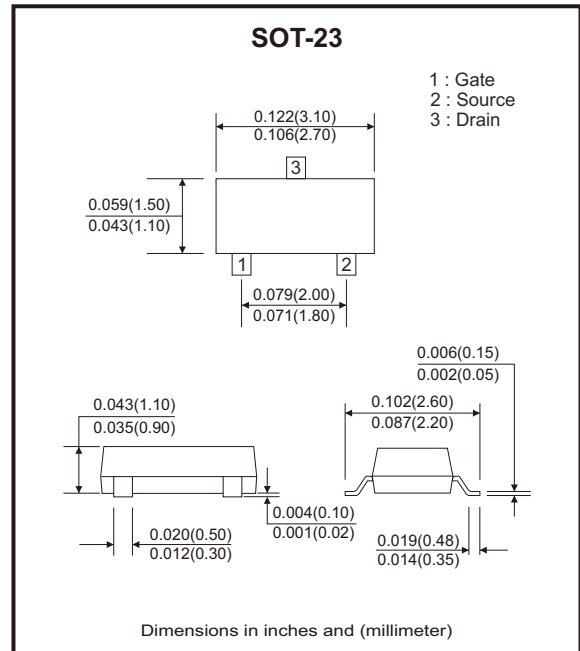
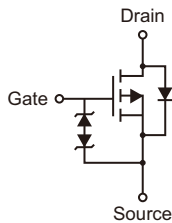
## Features

- Electrostatic sensitive devices.
- $V_{DS} (V) = -30V$ .
- $I_D = -2.7A (V_{GS} = -10V)$
- $R_{DS(ON)} < 190m\Omega (V_{GS} = -10V)$   
 $R_{DS(ON)} < 330m\Omega (V_{GS} = -4.5V)$
- AEC-Q101 Qualified.

## Mechanical data

- Case: SOT-23, molded plastic.

## Circuit Diagram



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

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DSS}$	-30	V
Gate-source voltage	$V_{GSS}$	$\pm 20$	V
Continuous drain current	$I_D$	$T_C = 25^\circ C$ -2.7 $T_C = 70^\circ C$ -2.2	A
Pulsed drain current	$I_{DM}$	-10	A
Power dissipation	$P_D$	$T_C = 25^\circ C$ 2.3 $T_C = 70^\circ C$ 1.5 $T_A = 25^\circ C$ 1.0 $T_A = 70^\circ C$ 0.7	W
Thermal resistance, junction to ambient	$R_{\theta JA}$	120	$^\circ C/W$
Junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

## Electrical Characteristics (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static Parameters</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1		-3	V
On-state drain current	$I_{D(on)}$	$V_{DS} = -5V, V_{GS} = -10V$	-10			A
Static drain-source on resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -1.9A$		158	190	m $\Omega$
		$V_{GS} = -4.5V, I_D = -1.4A$		275	330	
Drain-source diode forward voltage	$V_{SD}$	$I_S = -1.5A, V_{GS} = 0V$		-0.8	-1.2	V
Forward transconductance	$g_{FS}$	$V_{DS} = -5V, I_D = -1.9A$		2		S
Max. body-diode continuous current	$I_S$				-1.75	A
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		155		pF
Output capacitance	$C_{oss}$			35		
Reverse transfer capacitance	$C_{rss}$			25		
Gate resistance	$R_G$	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		4	8	$\Omega$
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, R_L = 10\Omega, I_{DS} = -1.5A, V_{GEN} = -10V, R_G = 1\Omega$		4	8	nS
Rise time	$t_r$			11	18	
Turn-off delay time	$t_{d(off)}$			11	18	
Fall time	$t_f$			8	18	
Total gate charge	$Q_g$	$V_{GS} = -15V, V_{DS} = -10V, I_D = -1.9A$		15.5	22	nC
				2	4	
Gate-source charge	$Q_{gs}$	$V_{GS} = -15V, V_{DS} = -4.5V, I_D = -1.9A$		0.6		
Gate-drain charge	$Q_{gd}$			1		
Body diode reverse recovery time	$t_{rr}$	$I_F = -1.5A, dI/dt = 100A/\mu s$		17	26	nS
Body diode reverse recovery charge	$Q_{rr}$				7	

## Rating and Characteristic Curves (ACMSP2303T-HF)

Fig.1 - Output Characteristics

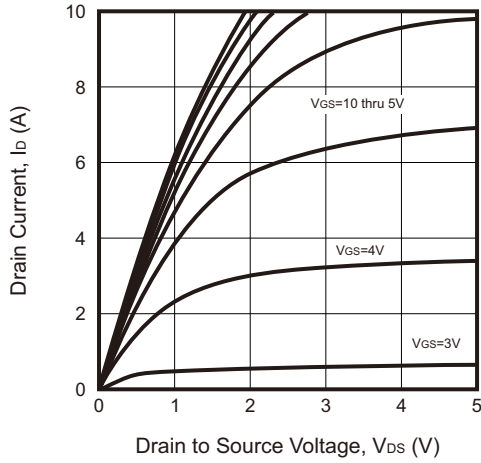


Fig.2 - Transfer Characteristics

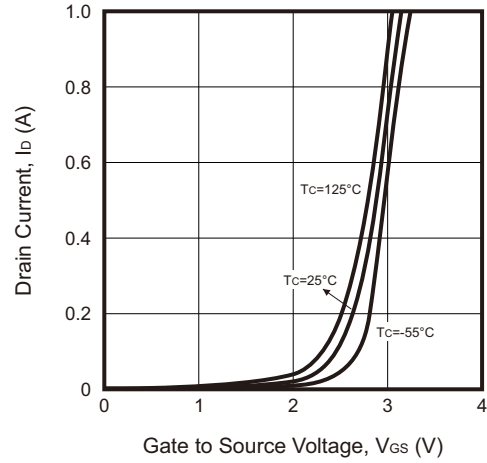


Fig.3 - On-Resistance vs. Drain Current and Gate Voltage

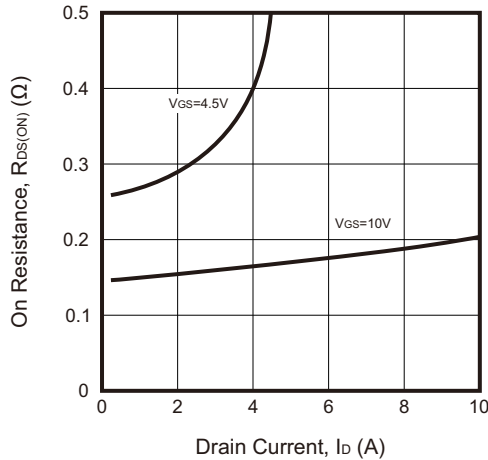


Fig.4 - Capacitance

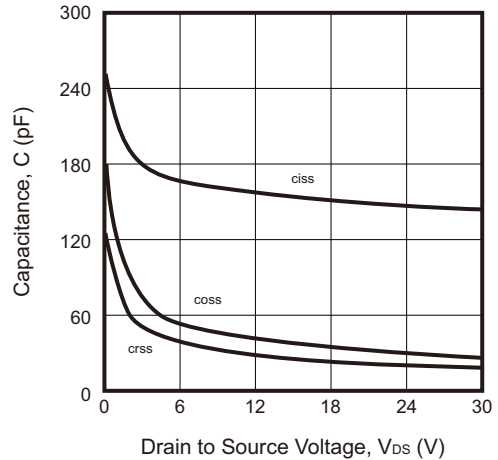


Fig.5 - Gate Charge

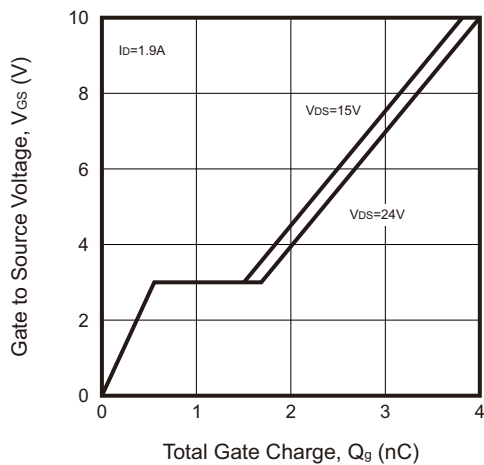
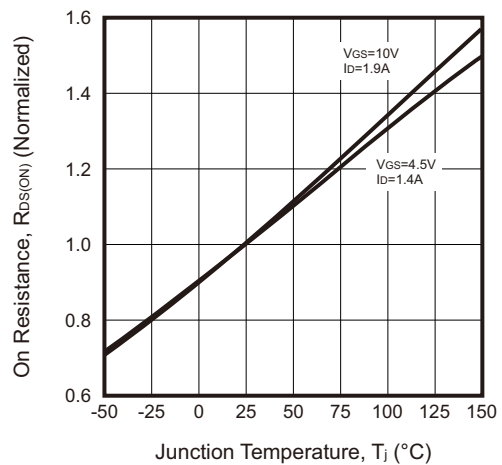


Fig.6 - On-Resistance vs. Junction Temperature



Company reserves the right to improve product design, functions and reliability without notice.

## Rating and Characteristic Curves (ACMSP2303T-HF)

Fig.7 - Source Drain Diode Forward Voltage

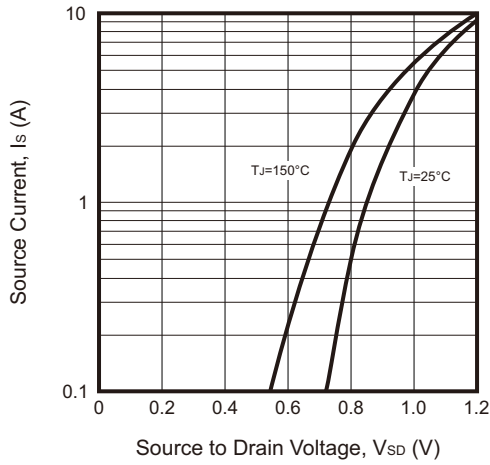


Fig.8 - On-Resistance vs. Gate to Source Voltage

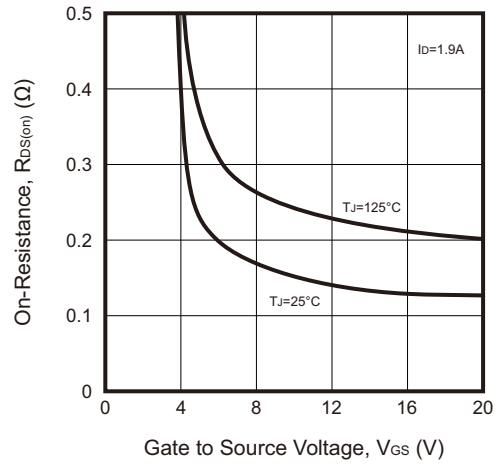


Fig.9 - Threshold Voltage

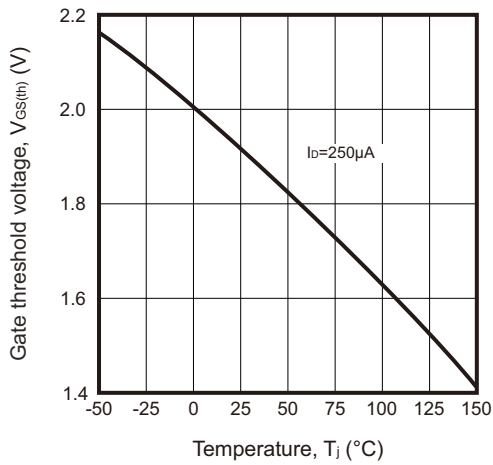
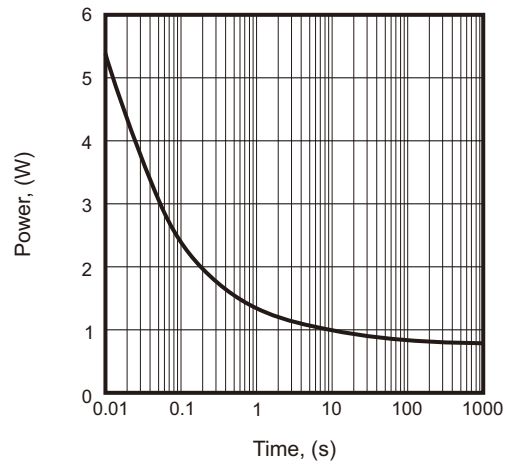
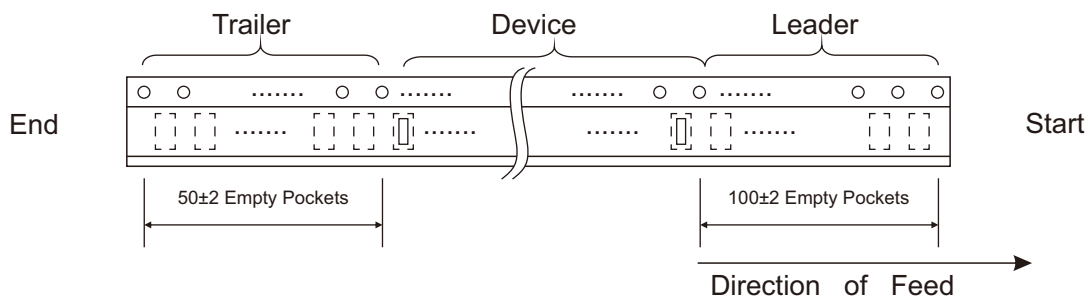
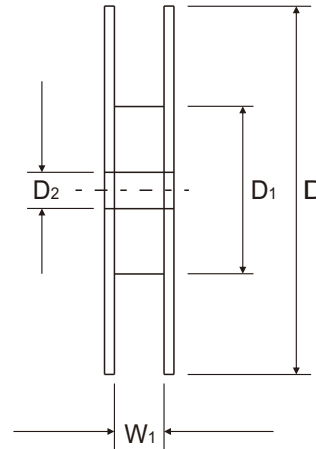
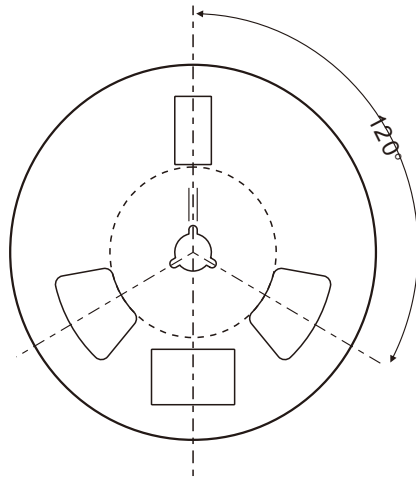
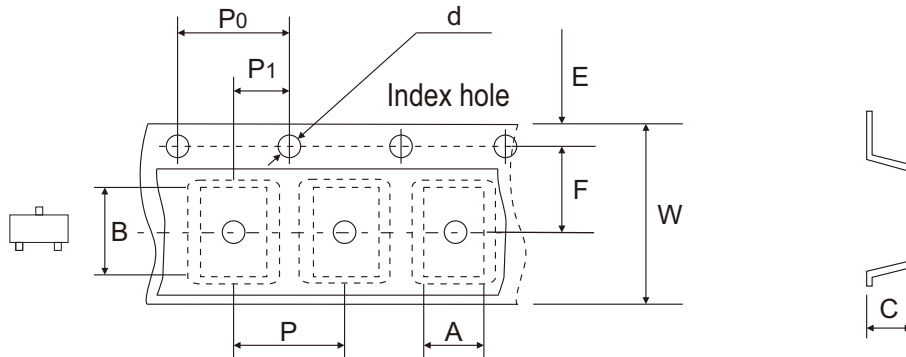


Fig.10 - Single Pulse Power



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	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

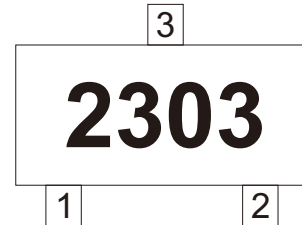
SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 + 0.012 - 0.004	0.374 ± 0.039

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REV:A

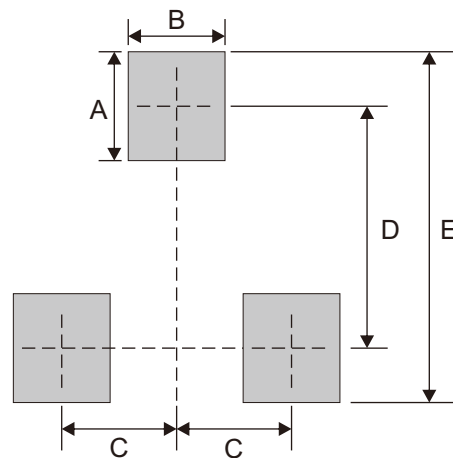
## Marking Code

Part Number	Marking Code
ACMSP2303T-HF	2303



## Suggested 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



Note: 1. The pad layout is for reference purposes only.

## Standard Packaging

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