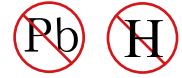




# P-Channel Enhancement MOSFET



VDS= -30V, ID= -4.2A

## Features

Advanced trench process technology  
High Density Cell Design For Ultra Low On-Resistance



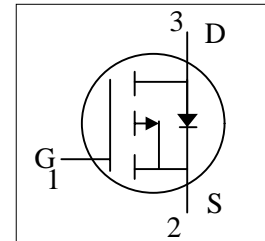
SOT-23 (TO-236AB)

## MARKING

P05

## PACKAGE INFORMATION

Package	Shipping
SOT-23	3000/Tape&Reel



## MAXIMUM RATINGS AND THERMAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	-30	V
Gate-Source Voltage	V <sub>GS</sub>	±12	
Continuous Drain Current	I <sub>D</sub>	-4.2	A
Pulsed Drain Current <sup>1)</sup>	I <sub>DM</sub>	-30	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C
Total Power Dissipation	P <sub>D</sub>	1.4	W
Junction-to-Ambient Thermal Resistance (PCB mounted) <sup>2)</sup>	R <sub>θJA</sub>	140	°C/W

Note: 1. Repetitive Rating: Pulse width limited by the maximum junction temperature  
2. 1-in 2oz Cu PCB board

# DEVICE CHARACTERISTICS

## YSP2305

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static <sup>2)</sup></b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -4.2A$		53.0	70.0	m $\Omega$
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$		64.0	85.0	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -2.5V, I_D = -1A$		86.0	130.0	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.7		-1.3	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -24V, V_{GS} = 0V$			-1	$\mu A$
Gate Body Leakage	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
Forward Transconductance	$g_{fs}$	$V_{DS} = -5V, I_D = -5A$	7	11		S
<b>Dynamic <sup>3)</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15V, I_D = -4A$ $V_{GS} = -4.5V$		6.36		nC
Gate-Source Charge	$Q_{gs}$			1.79		
Gate-Drain Charge	$Q_{gd}$			1.42		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15V, R_L = 3.6\Omega$ $I_D = -1A, V_{GEN} = -10V$ $R_G = 6\Omega$		11.36		ns
Turn-On Rise Time	$t_r$			2.32		
Turn-Off Delay Time	$t_{d(off)}$			34.88		
Turn-Off Fall Time	$t_f$			3.52		
Input Capacitance	$C_{iss}$	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$		826.18		pF
Output Capacitance	$C_{oss}$			90.74		
Reverse Transfer Capacitance	$C_{rss}$			53.18		
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	$I_S$				-2.2	A
Diode Forward Voltage	$V_{SD}$	$I_S = -1.0A, V_{GS} = 0V$			-1	V

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

2. Static parameters are based on package level with recommended wire-bonding

3. Guaranteed by design; not subject to production testing

# DEVICE CHARACTERISTICS

## YSP2305

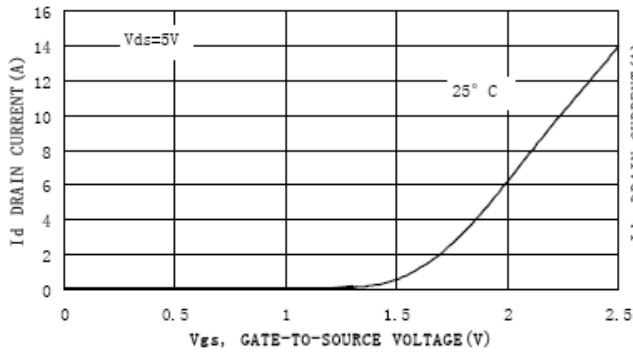


Figure 1. Transfer Characteristics

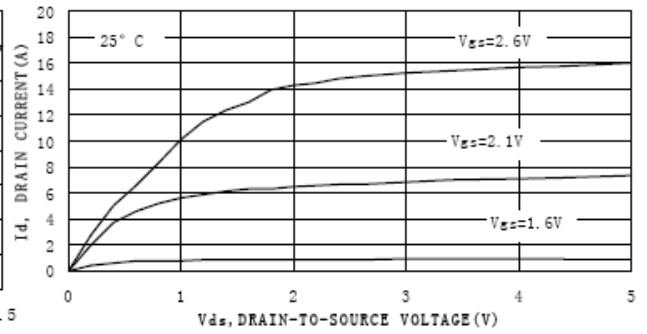


Figure 2. On-Region Characteristics

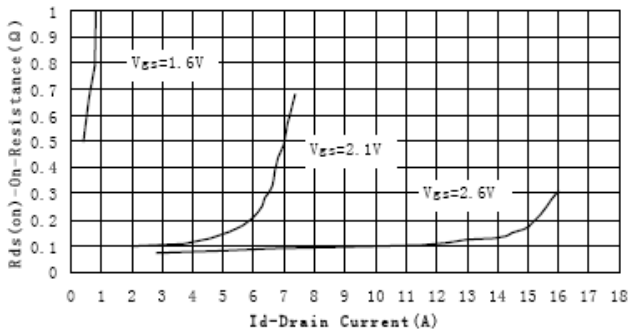


Figure 3. On-Resistance versus Drain Current

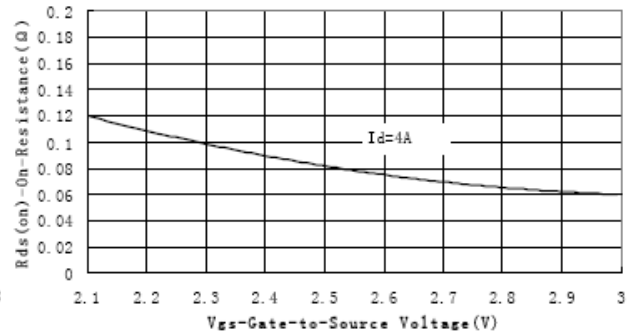


Figure 4. On-Resistance vs. Gate-to-Source Voltage

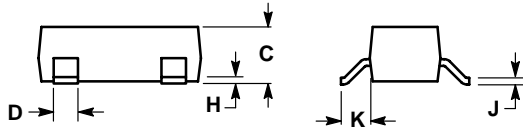
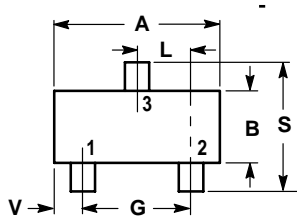
# PACKAGE OUTLINE & DIMENSIONS

## YSP2305

### SOT-23

**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

