



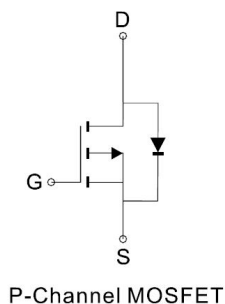
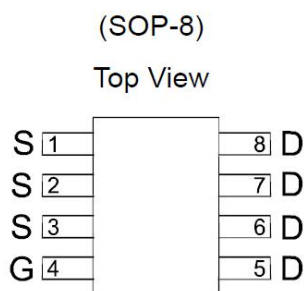
FEATURES

- ✧ $R_{DS(on)} = 13m\Omega$ @ $V_{GS} = -10V, I_D = -12A$
- ✧ $R_{DS(on)} = 20m\Omega$ @ $V_{GS} = -4.5V, I_D = -12A$
- ✧ High performance trench technology for extremely low $R_{DS(on)}$
- ✧ High power and current handing capability
- ✧ ROHS Compliant

APPLICATIONS

- ✧ Power Management in Note book
- ✧ Portable Equipment
- ✧ Battery Powered System
- ✧ DC/DC Converter
- ✧ Load Switch
- ✧ DSC
- ✧ LCD Display inverter

PIN CONFIGURATION



Absolute Maximum Ratings (TA = 25 unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain to Source Voltage	-30	V
V_{GS}	Gate to Source Voltage	±20	V
I_D	Drain Current -Continuous (Note1a)	-12	A
	-Pulsed	-75	A
P_D	Power Dissipation for Single Operation (Note1a)	2.5	W
	(Note1b)	1.2	
	(Note1c)	1.0	
T_J, T_{STG}	Operating and Storage Temperature	-55 to 150	°C

Thermal Characteristics

$R_{\theta JA}$	Thermal Resistance , Junction to Ambient (Note 1a)	50	°C/W
$R_{\theta JC}$	Thermal Resistance , Junction to Case (Note 1)	25	°C/W

Ordering Information

Device	Package	Units per Reel
JY9425	SOP-8	3000PCS



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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

B_{VDSS}	Drain to Source Breakdown Voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-30			V
$\frac{\Delta B_{VDSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D = -250\mu\text{A}$, referenced to 25°C		-20		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
I_{GSS}	Gate to Source Leakage Current	$V_{GS} = \pm 25\text{V}$, $V_{DS} = 0\text{V}$			± 100	nA

On Characteristics (Note 2)

$V_{GS(th)}$	Gate to Source Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = -250\mu\text{A}$	-1	-1.9	-3	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate to Source Threshold Voltage Temperature Coefficient	$I_D = -250\mu\text{A}$, referenced to 25°C		8.1		mV/ $^\circ\text{C}$
$r_{DS(on)}$	Drain to Source On Resistance	$V_{GS} = -10\text{V}$, $I_D = -12\text{A}$		13	15	mΩ
		$V_{GS} = -4.5\text{V}$, $I_D = -12\text{A}$		20	22	
		$V_{GS} = -10\text{V}$, $I_D = -12\text{A}$ $T_J = 125^\circ\text{C}$		17	22	
g_{FS}	Forward Transconductance	$V_{DS} = -5\text{V}$, $I_D = -12\text{A}$		60		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -15\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$		1200		pF
C_{oss}	Output Capacitance			400		pF
C_{rss}	Reverse Transfer Capacitance			160	190	pF

Switching Characteristics (Note 2)

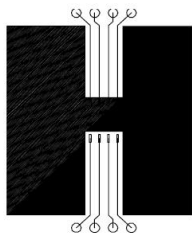
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -15\text{V}$, $I_D = -1\text{A}$ $V_{GS} = -10\text{V}$, $R_{GS} = 6\Omega$		7		ns
t_r	Rise Time			9	12	ns
$t_{d(off)}$	Turn-Off Delay Time			25.6	28	ns
t_f	Fall Time			12	16	ns
Q_g	Total Gate Charge	$V_{DS} = -15\text{V}$, $V_{GS} = -10\text{V}$, $I_D = -12\text{A}$		88	124	nC
Q_g	Total Gate Charge	$V_{DS} = -15\text{V}$, $V_{GS} = -5\text{V}$, $I_D = -12\text{A}$		46	65	nC
Q_{gs}	Gate to Source Gate Charge			8		nC
Q_{gd}	Gate to Drain Charge			23.5		nC

Drain-Source Diode Characteristics

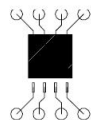
V_{SD}	Source to Drain Diode Forward Voltage	$V_{GS} = 0\text{V}$, $I_S = -2.1\text{A}$		-0.7	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F = 12\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$			45	ns
Q_{rr}	Reverse Recovery Charge	$I_F = 12\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$			34	nC

Notes:

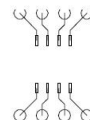
1: $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



a) $50^\circ\text{C}/\text{W}$ (10 sec)
when mounted on a 1 in^2
pad of 2 oz copper



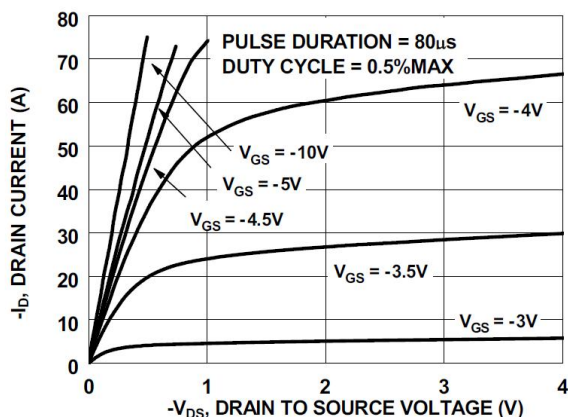
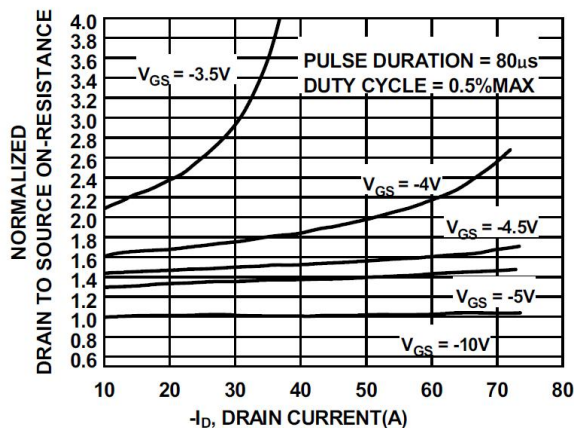
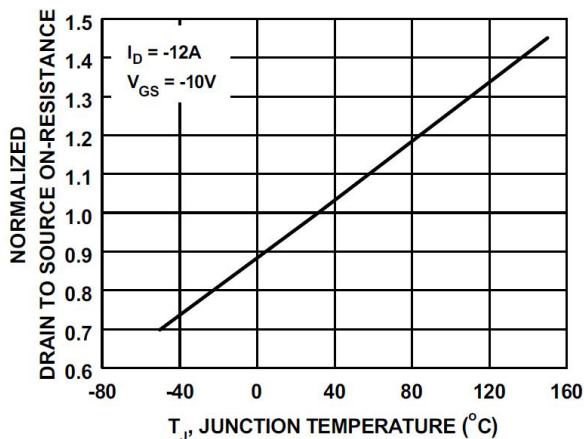
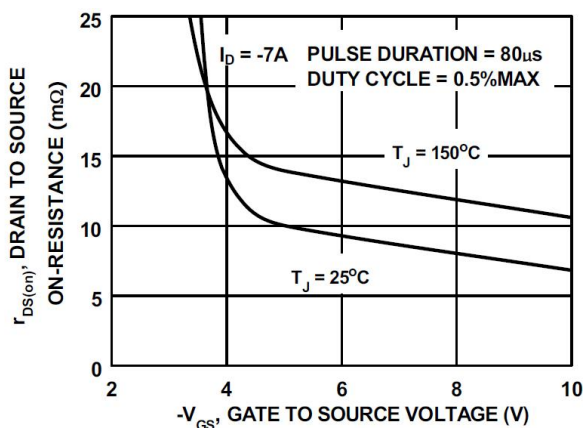
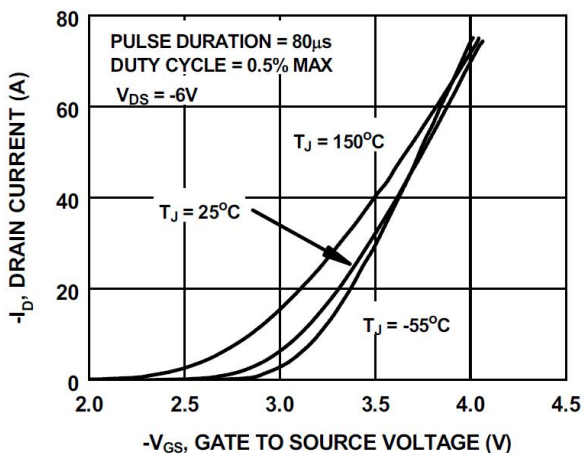
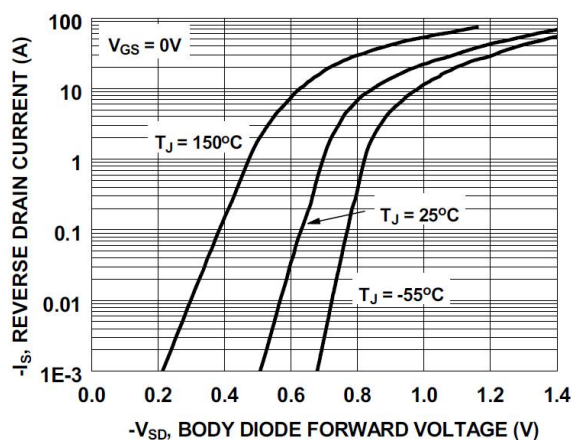
b) $105^\circ\text{C}/\text{W}$ when mounted
on a $.04\text{ in}^2$ pad of 2 oz
copper

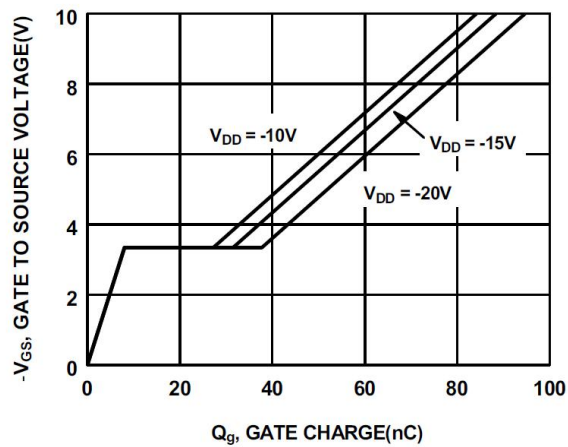
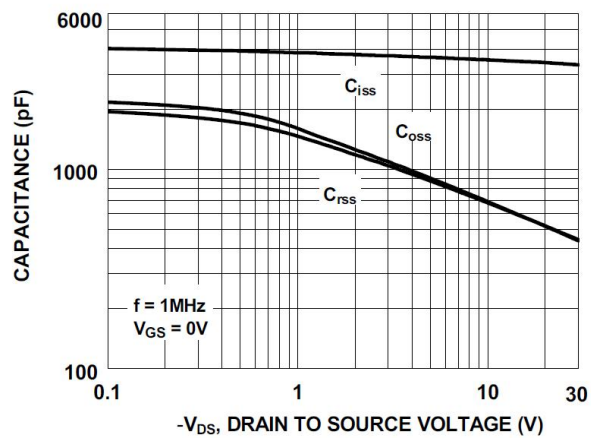
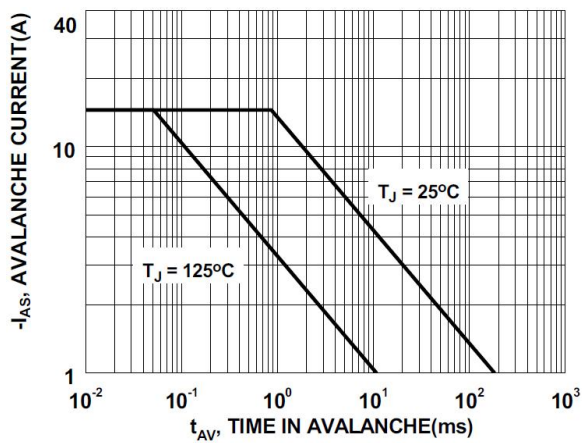
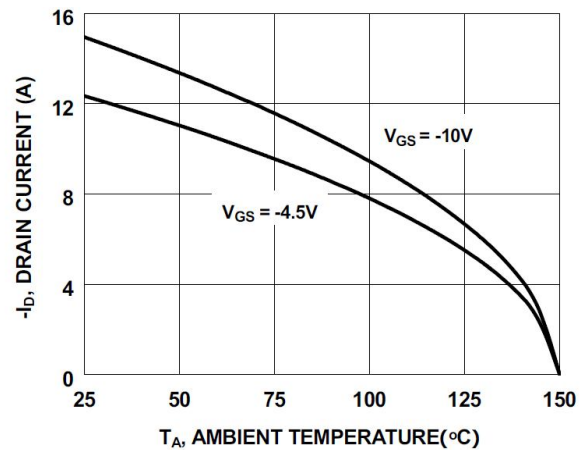
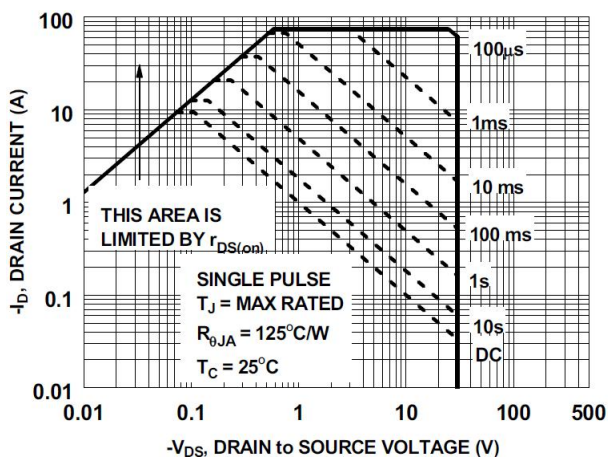


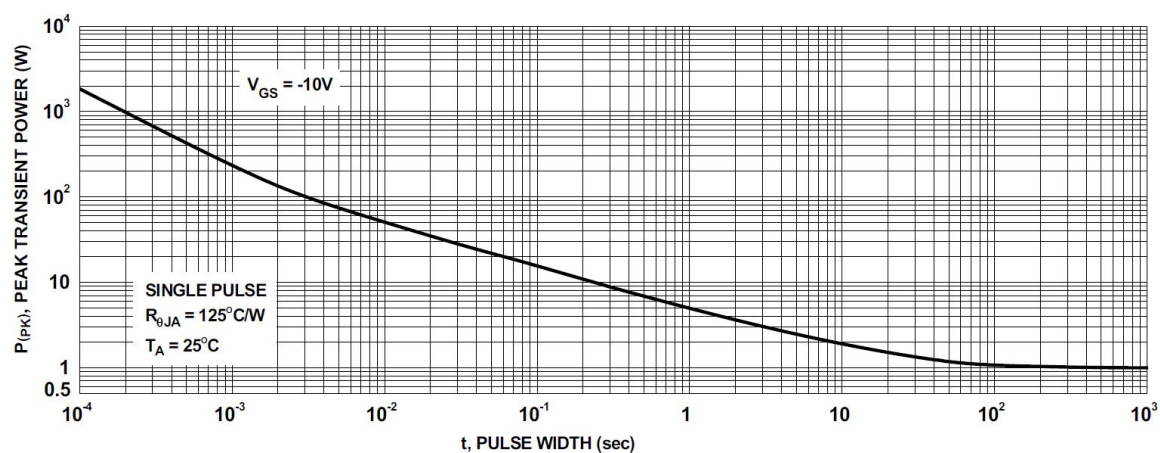
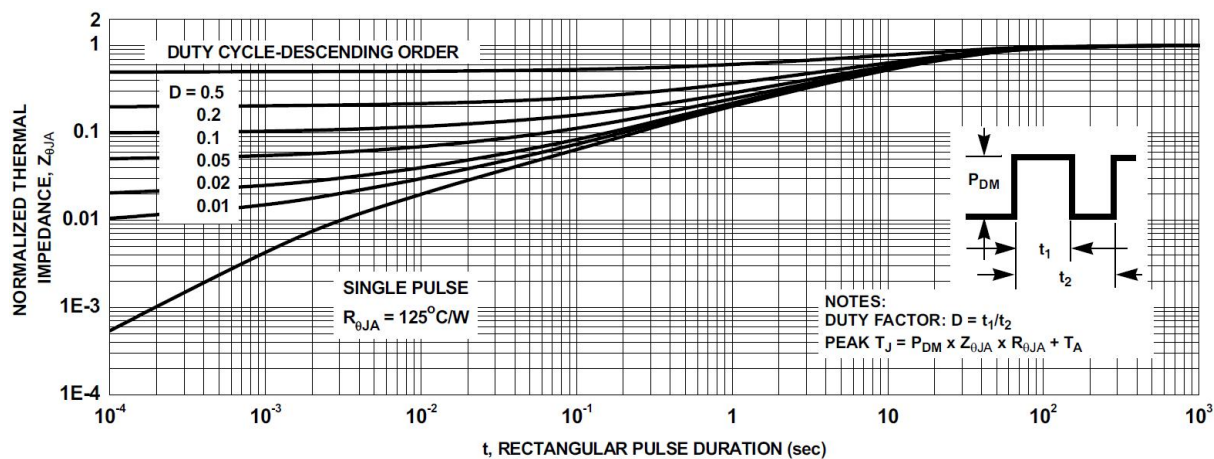
c) $125^\circ\text{C}/\text{W}$ when mounted
on a minimum pad

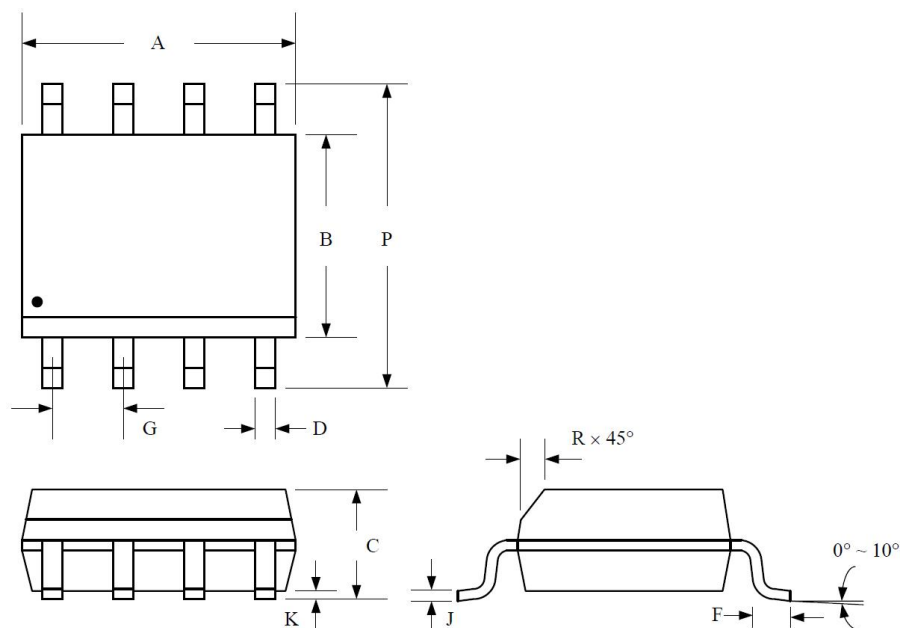
Scale 1 : 1 on letter size paper

2: Pulse Test: Pulse Width $< 300\mu\text{s}$, Duty Cycle $< 2.0\%$.

Typical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

Figure 1. On Region Characteristics

Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

Figure 3. Normalized On Resistance vs Junction Temperature

Figure 4. On-Resistance vs Gate to Source Voltage

Figure 5. Transfer Characteristics

Figure 6. Source to Drain Diode Forward Voltage vs Source Current

Typical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

Figure 7. Gate Charge Characteristics

Figure 8. Capacitance vs Drain to Source Voltage

Figure 9. Unclamped Inductive Switching Capability

Figure 10. Maximum Continuous Drain Current vs Ambient Temperature

Figure 11. Forward Bias Safe Operating Area

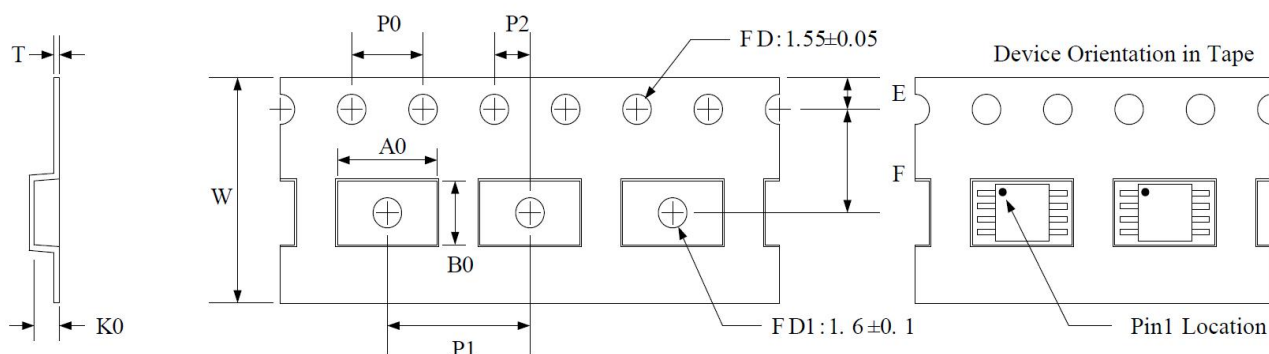
Typical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

Figure 13. Single Pulse Maximum Power Dissipation

Figure 14. Junction-to-Ambient Transient Thermal Response Curve

SOP-8 package


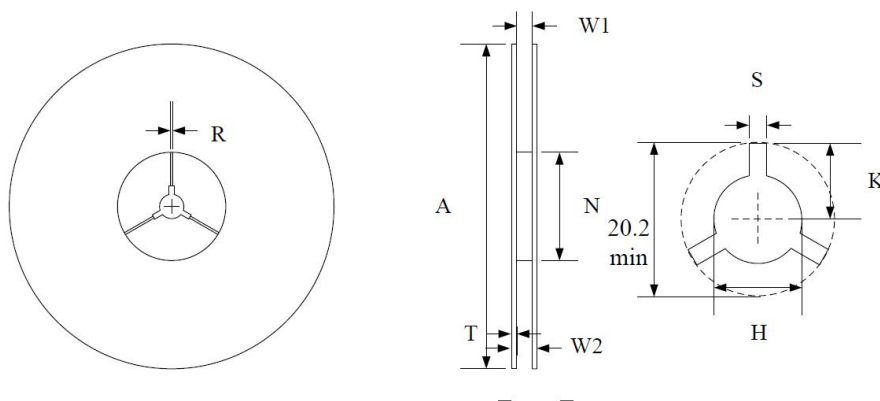
Package Dimensions (Controlling dimensions are in millimeters)

Symbol	Dimensions (mm)		Dimensions (Inches)	
	Minimum	Maximum	Minimum	Maximum
A	4.800	5.000	0.189	0.196
B	3.800	4.000	0.150	0.157
C	1.350	1.750	0.054	0.068
D	0.350	0.490	0.014	0.019
F	0.400	1.250	0.016	0.049
G	1.27 BSC		0.05 BSC	
J	0.180	0.250	0.007	0.009
K	0.100	0.250	0.004	0.008
P	5.800	6.200	0.229	0.244
R	0.250	0.500	0.010	0.019

Tape and Reel Specification



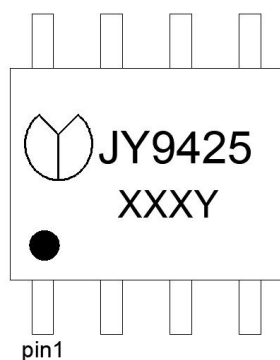
Symbol	W	A0	B0	K0	E	F	P1	P0	P2	T
Dimensions (mm)	12.00±0.3	6.40±0.1	5.2±0.1	2.10±0.1	1.75±0.1	5.50±0.1	8.00±0.1	4.0±0.1	2.0±0.1	0.3±0.05



Symbol	Reel Size	A	N	W2	W1	H	T	S	K	R
Dimensions (mm)	Φ330	330.0±2.0	100.0±2.0	18.4 max	12.4+2.0 -0.0	13.0+0.5 -0.2	2.0±0.2	1.5 min	10.1 min	2.5 min



Marking Information



- (1) JY9425: Part number, fixed
- (2) XXX: Wafer's Lot No
- Y: Internal code