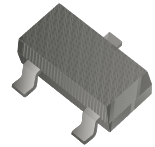


N-Channel MOSFET

RoHS Device
Halogen Free



Features

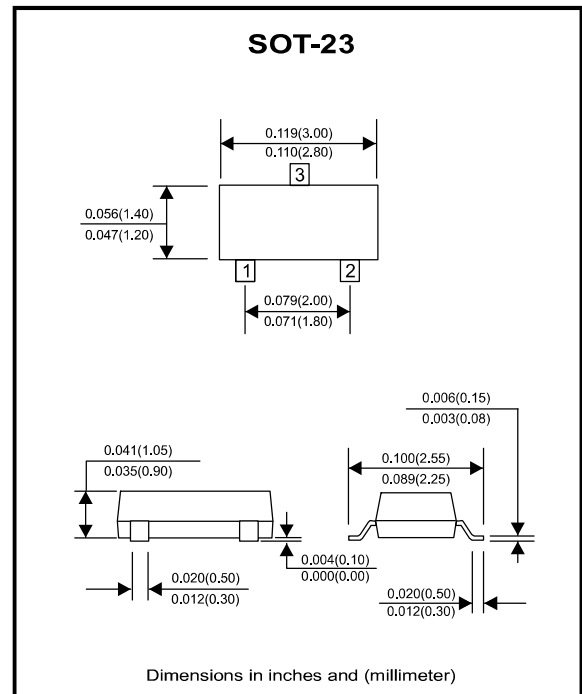
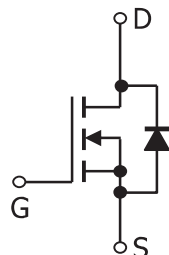
- $V_{DS}=30V$, $I_D=5.8A$
- $R_{DS(ON)} < 50\text{ m}\Omega$ @ $V_{GS} = 2.5V$
 $R_{DS(ON)} < 40\text{m}\Omega$ @ $V_{GS} = 4.5V$
 $R_{DS(ON)} < 35\text{m}\Omega$ @ $V_{GS} = 10V$
- High Power and Current Handling Capability
- Lead Free Product is Acquired
- Surface Mount Package

Application

- PWM Applications
- Load Switch
- Power Management

Circuit Diagram

- G : Gate
- S : Source
- D : Drain

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		± 12	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	5.8	A
		$T_C = 100^\circ\text{C}$	4	
I_{DM}	Pulsed Drain Current ^{note1}		30	A
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	1.4	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		1.0	$^\circ\text{C}/\text{W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = 250μA	30	33	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.7	0.9	1.4	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =2.5V, I _D =4A	-	45	50	mΩ
		V _{GS} =4.5V, I _D =2.9A	-	31	40	
		V _{GS} =10V, I _D =2.9A		28	35	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =2.9A	10	-	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz	-	623	-	pF
C _{oss}	Output Capacitance		-	99	-	pF
C _{rss}	Reverse Transfer Capacitance		-	77	-	pF
Q _g	Total Gate Charge	V _{DS} = 15V, I _D =5.8A, V _{GS} = 4.5V	-	9.5	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	3	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = 15V, I _D =2.9A, R _{GEN} = 3Ω, V _{GS} =10V	-	3.3	-	ns
t _r	Turn-on Rise Time		-	4.8	-	ns
t _{d(off)}	Turn-off Delay Time		-	26	-	ns
t _f	Turn-off Fall Time		-	4	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5.8	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	30	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =2.9A	-	0.75	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

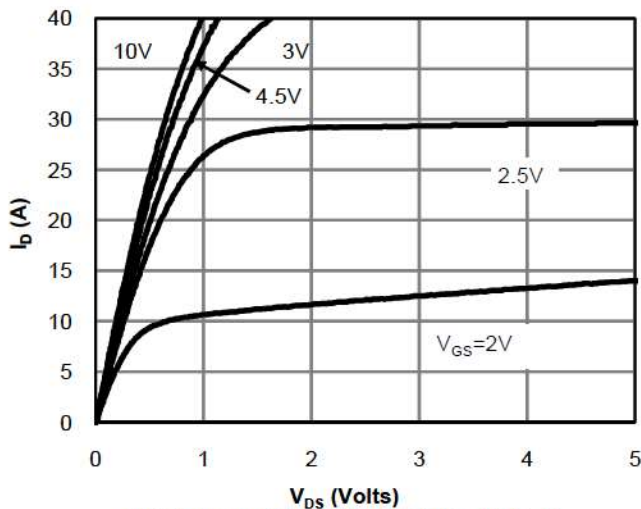


Fig 1: On-Region Characteristics (Note E)

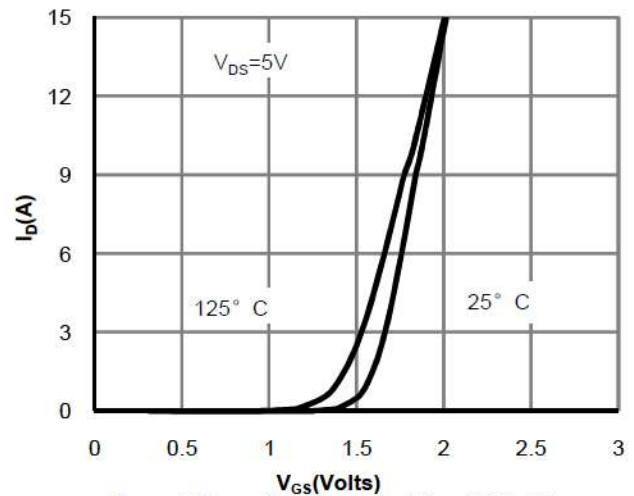


Figure 2: Transfer Characteristics (Note E)

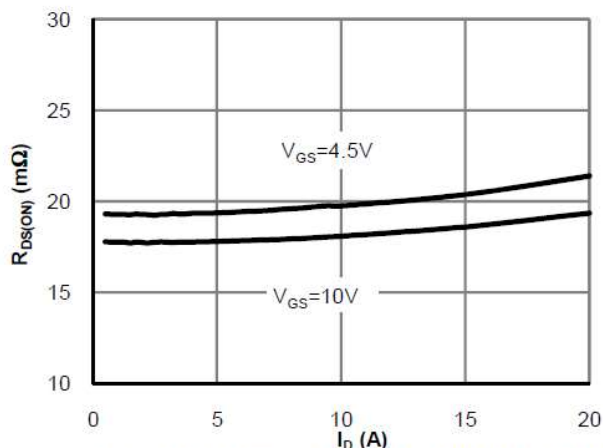


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

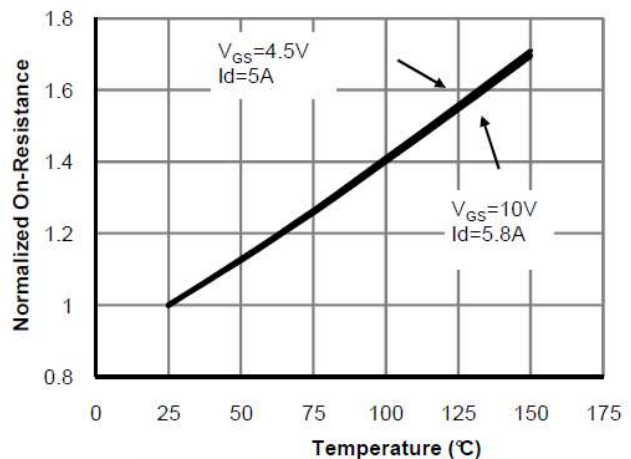


Figure 4: On-Resistance vs. Junction Temperature (Note E)

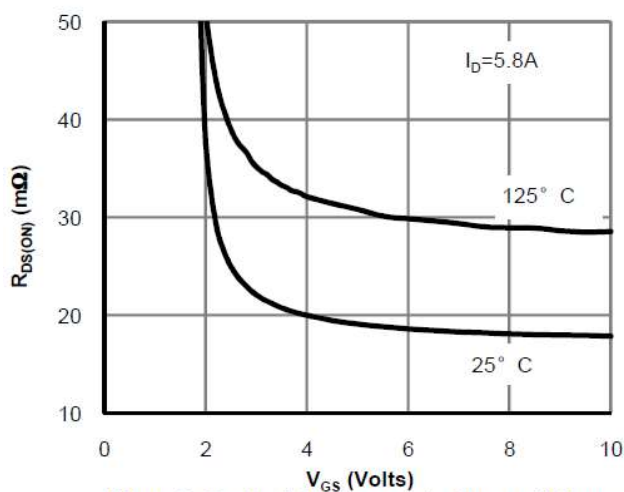


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

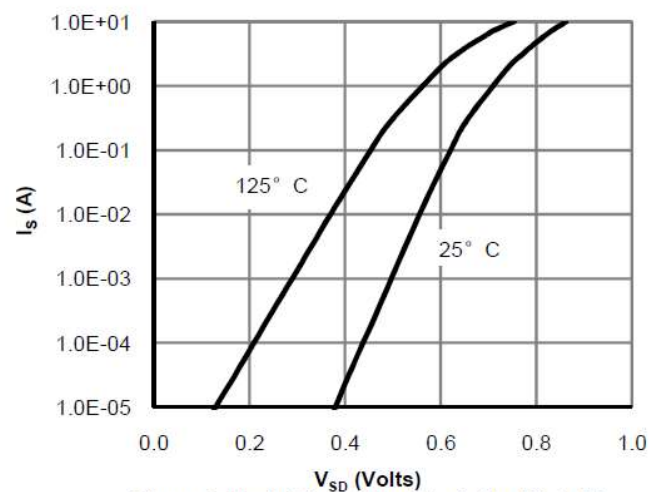


Figure 6: Body-Diode Characteristics (Note E)

Typical Performance Characteristics

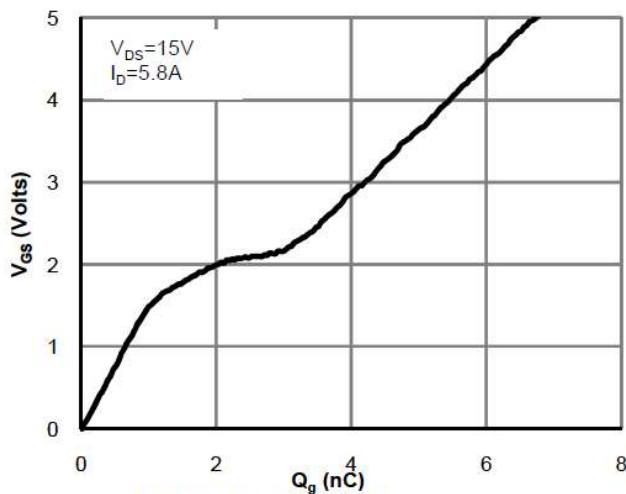


Figure 7: Gate-Charge Characteristics

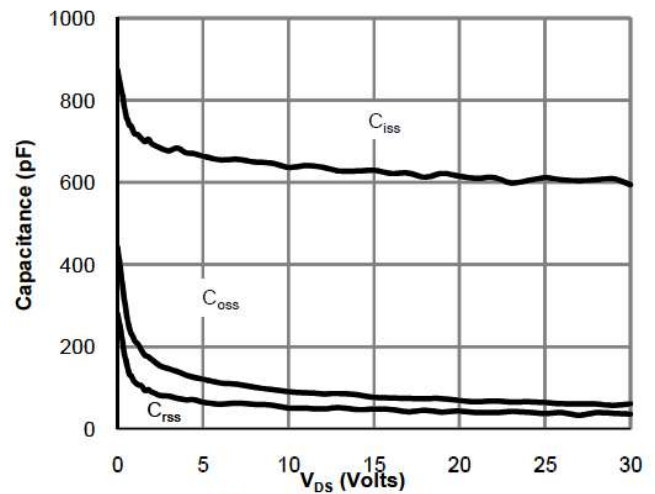


Figure 8: Capacitance Characteristics

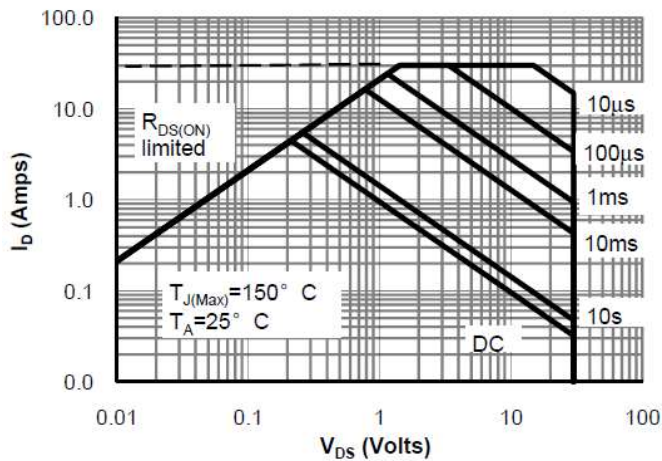


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

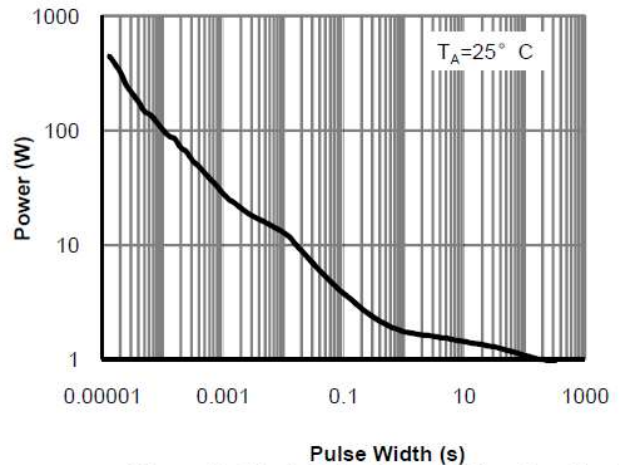


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

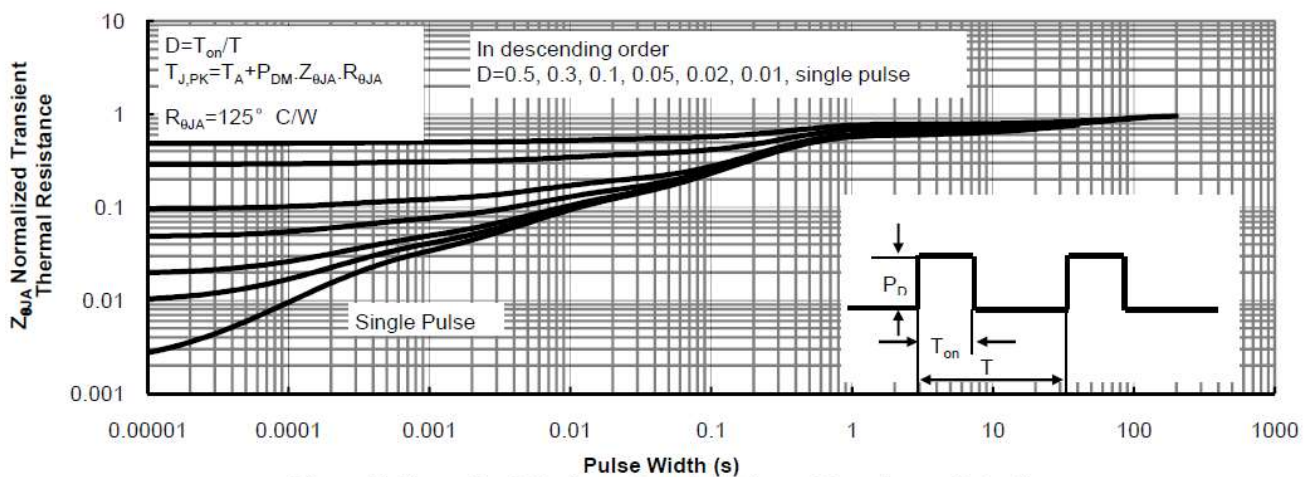
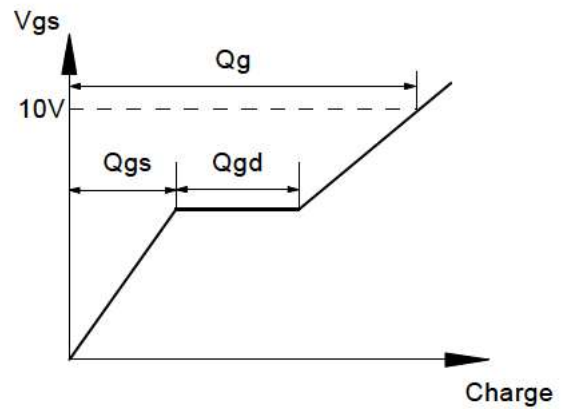
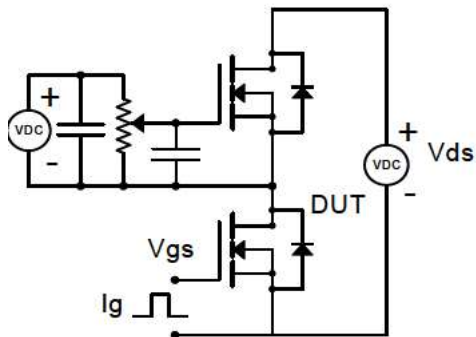


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

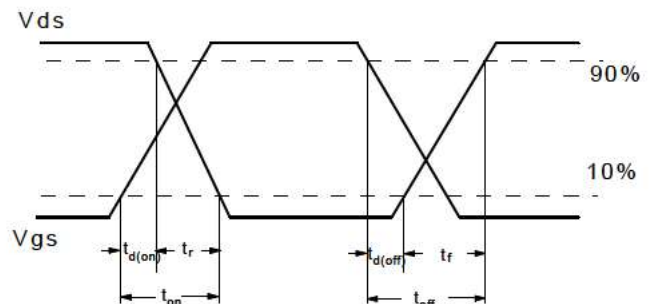
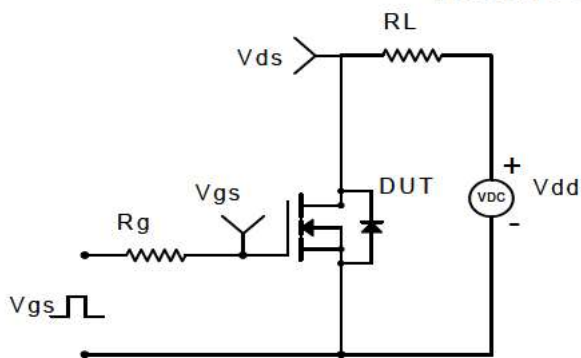
Typical Performance Characteristics

Gate Charge Test Circuit & Waveform

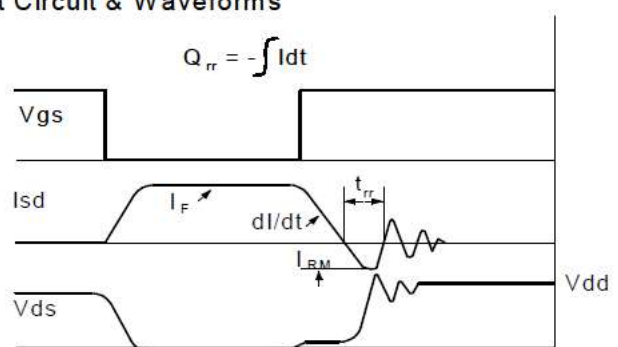
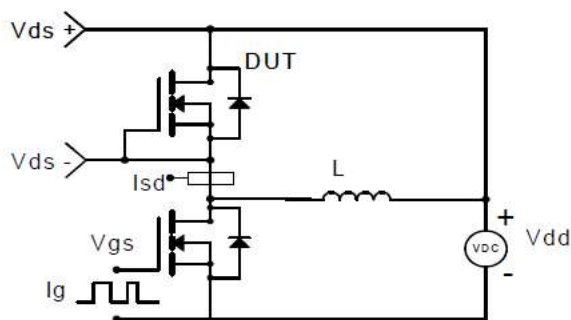


Resistive Switching Test Circuit & Waveforms

Resistive Switching Test Circuit & Waveforms

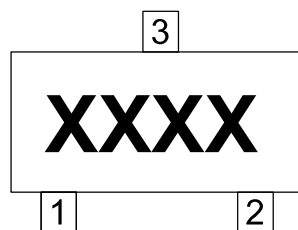


Diode Recovery Test Circuit & Waveforms



Marking Code

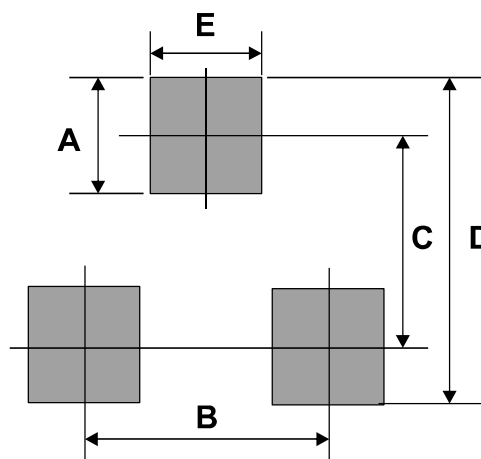
Part Number	Marking Code
LM3400A	3400



xxxx = Product type marking code

Suggested PAD Layout

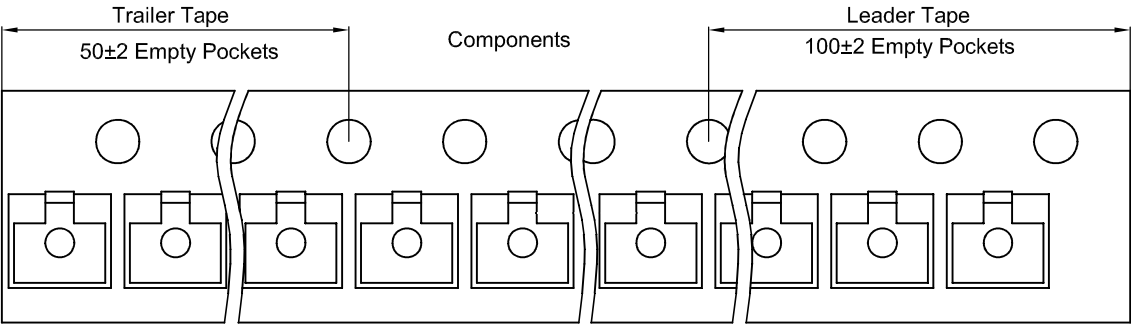
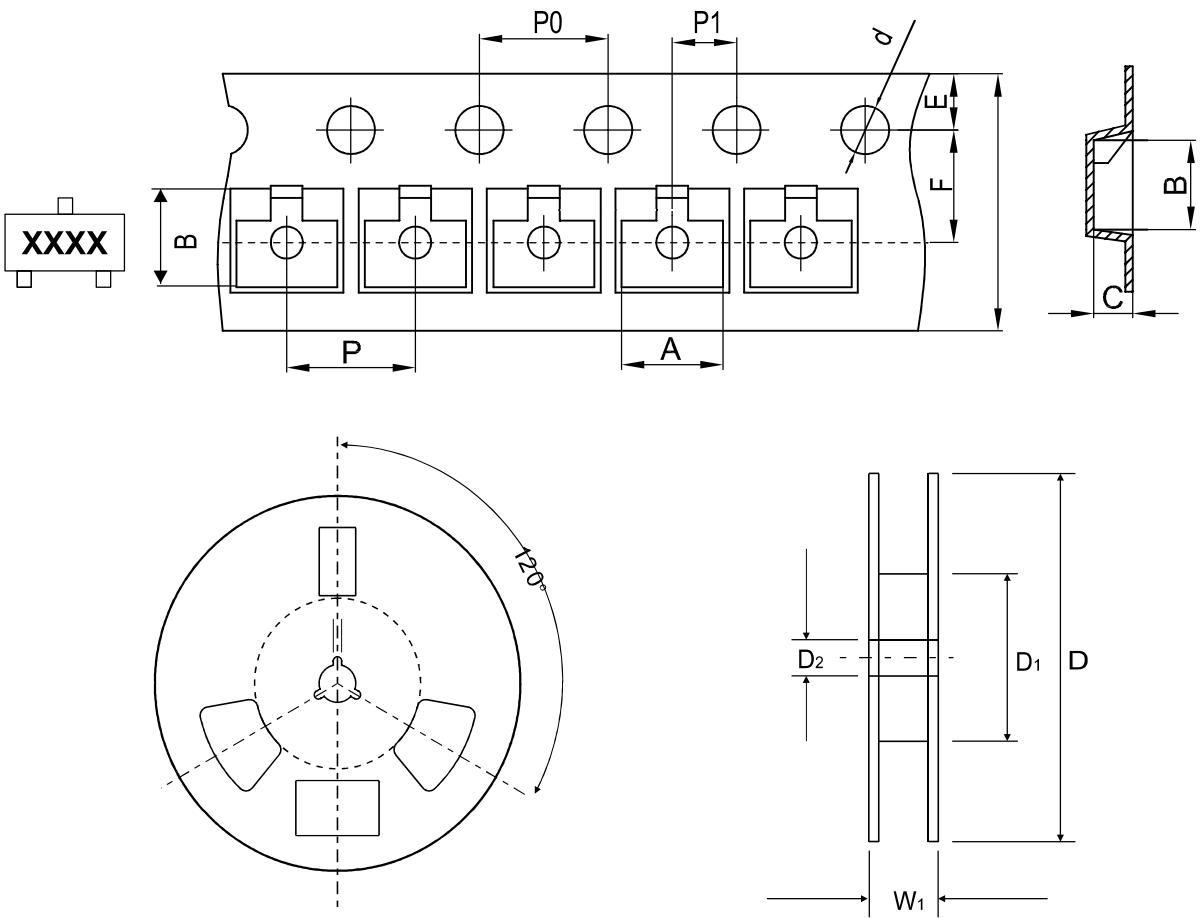
SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	1.90	0.075
C	2.02	0.080
D	2.82	0.111
E	0.60	0.024



Standard Packaging

Case Type	Qty Per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3,000	7

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 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 / - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 / - 0.004	0.484 ± 0.039

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