



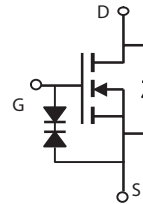
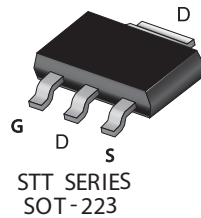
## N-Channel Enhancement Mode Field Effect Transistor

### PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
100V	1.2A	819 @ V <sub>GS</sub> =10V
		956 @ V <sub>GS</sub> =4.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



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

Symbol	Parameter	Limit	Units	
V <sub>DS</sub>	Drain-Source Voltage	100	V	
V <sub>GS</sub>	Gate-Source Voltage	±20	V	
I <sub>D</sub>	Drain Current-Continuous	T <sub>A</sub> =25°C	1.2	A
		T <sub>A</sub> =70°C	1.0	A
I <sub>DM</sub>	-Pulsed <sup>a</sup>	8	A	
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>c</sup>	2.25	mJ	
P <sub>D</sub>	Maximum Power Dissipation	T <sub>A</sub> =25°C	3	W
		T <sub>A</sub> =70°C	1.9	W
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 to 150	°C	

### THERMAL CHARACTERISTICS

Symbol	Parameter	Limit	Units
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	42	°C/W

# STT100

Ver 3.0

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	100			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =80V , V <sub>GS</sub> =0V			1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V			±10	uA
<b>ON CHARACTERISTICS</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	2	3	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =0.6A		655	819	m ohm
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =0.56A		708	956	m ohm
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> =0.6A		1.9		S
<b>DYNAMIC CHARACTERISTICS<sup>b</sup></b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V f=1.0MHz		155		pF
C <sub>OSS</sub>	Output Capacitance			20		pF
C <sub>RSS</sub>	Reverse Transfer Capacitance			12		pF
<b>SWITCHING CHARACTERISTICS<sup>b</sup></b>						
t <sub>D(ON)</sub>	Turn-On Delay Time	V <sub>DD</sub> =50V I <sub>D</sub> =0.6A V <sub>GS</sub> =10V R <sub>GEN</sub> = 6 ohm		17		ns
t <sub>r</sub>	Rise Time			13		ns
t <sub>D(OFF)</sub>	Turn-Off Delay Time			185		ns
t <sub>f</sub>	Fall Time			26		ns
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =0.6A, V <sub>GS</sub> =10V		3.2		nC
		V <sub>DS</sub> =50V, I <sub>D</sub> =0.6A, V <sub>GS</sub> =4.5V		2		nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =0.6A,		0.7		nC
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>GS</sub> =10V		1		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =0.4A		0.81	1.3	V
<b>Notes</b> a. Pulse Test: Pulse Width < 300us, Duty Cycle < 2%. b. Guaranteed by design, not subject to production testing. c. Starting T <sub>J</sub> =25°C, L=0.5mH, V <sub>DD</sub> = 50V. (See Figure13)						

Oct, 18, 2012

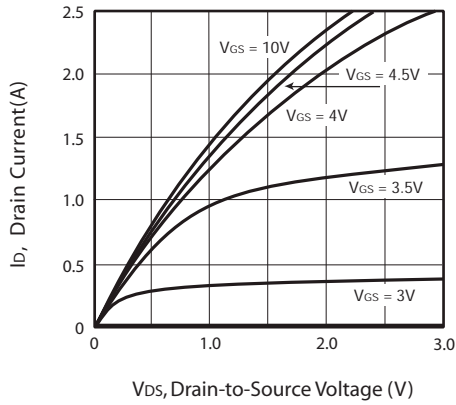


Figure 1. Output Characteristics

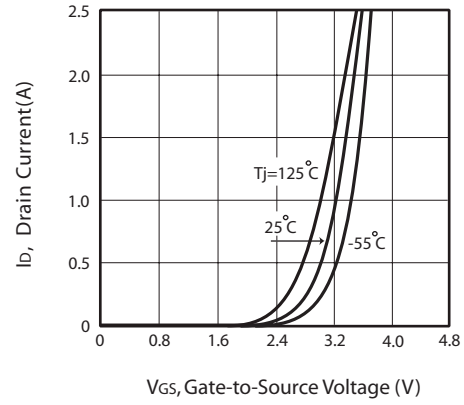


Figure 2. Transfer Characteristics

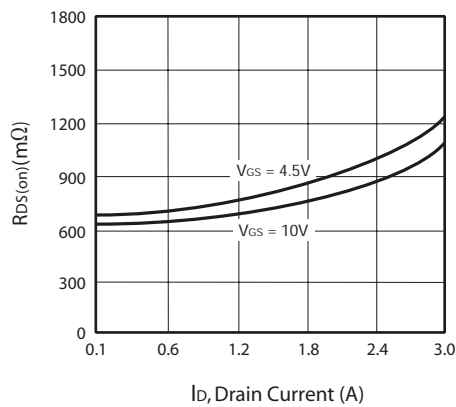


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

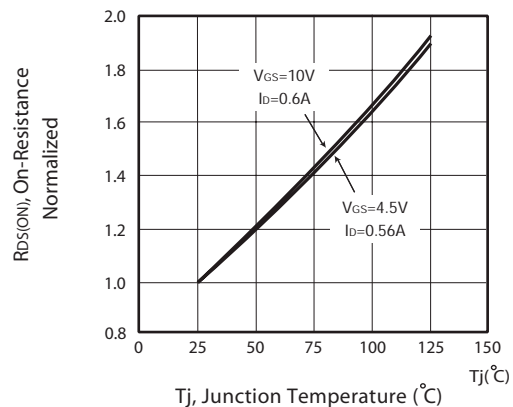


Figure 4. On-Resistance Variation with Drain Current and Temperature

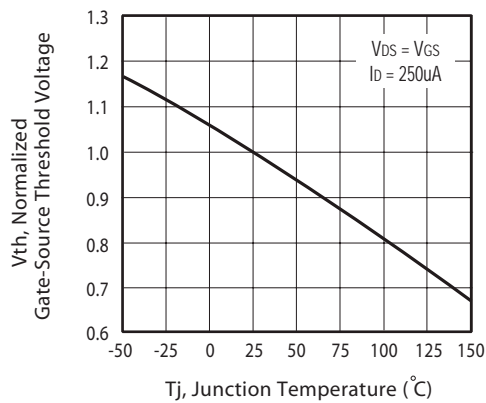


Figure 5. Gate Threshold Variation with Temperature

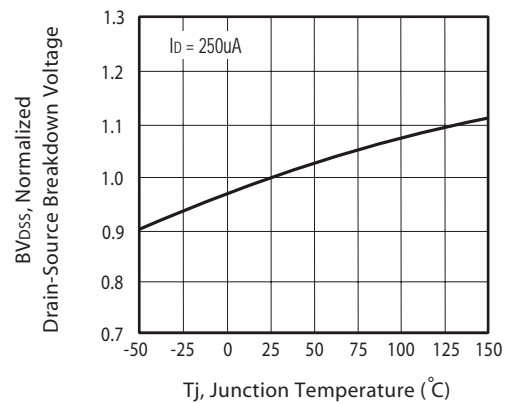


Figure 6. Breakdown Voltage Variation with Temperature

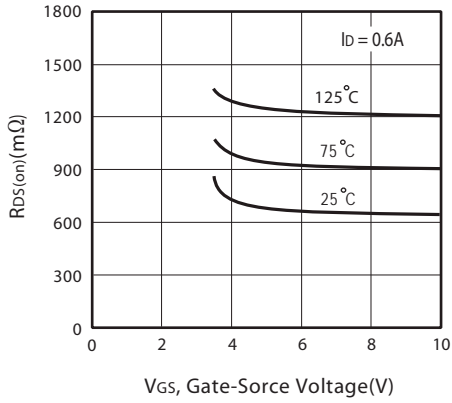


Figure 7. On-Resistance vs. Gate-Source Voltage

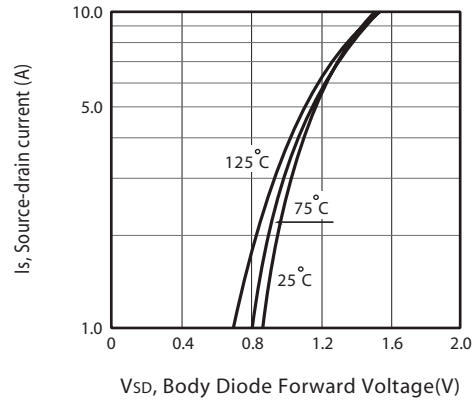


Figure 8. Body Diode Forward Voltage Variation with Source Current

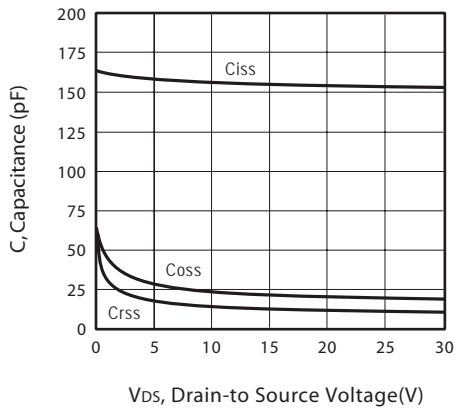


Figure 9. Capacitance

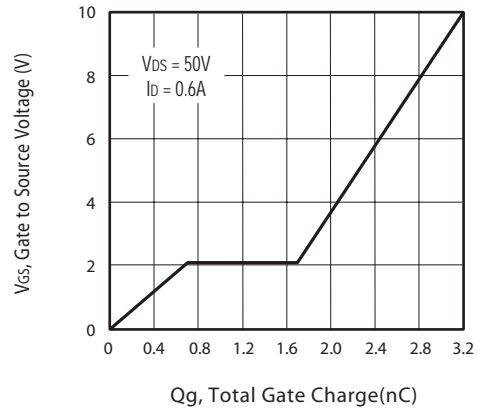


Figure 10. Gate Charge

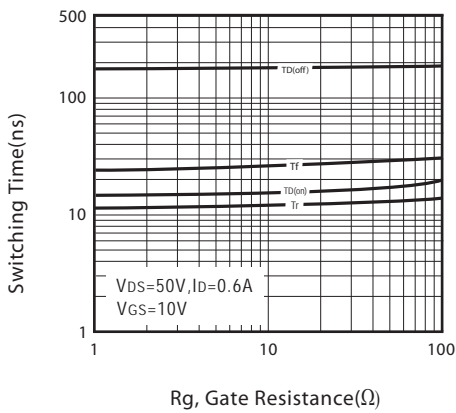


Figure 11. switching characteristics

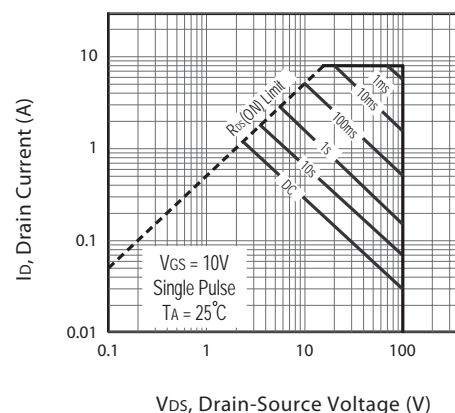
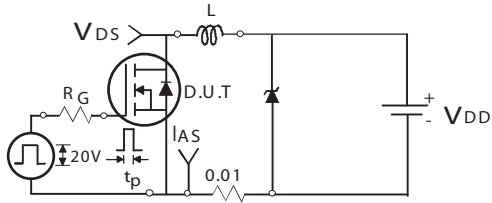
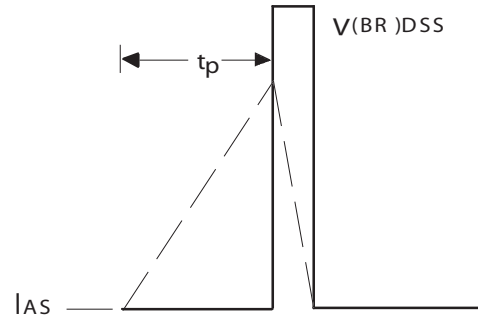


Figure 12. Maximum Safe Operating Area



Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

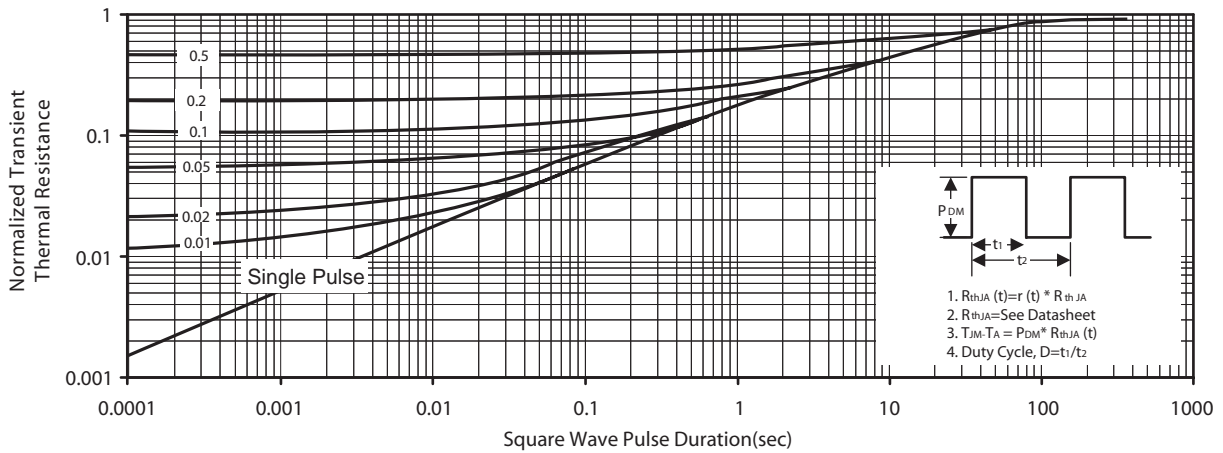
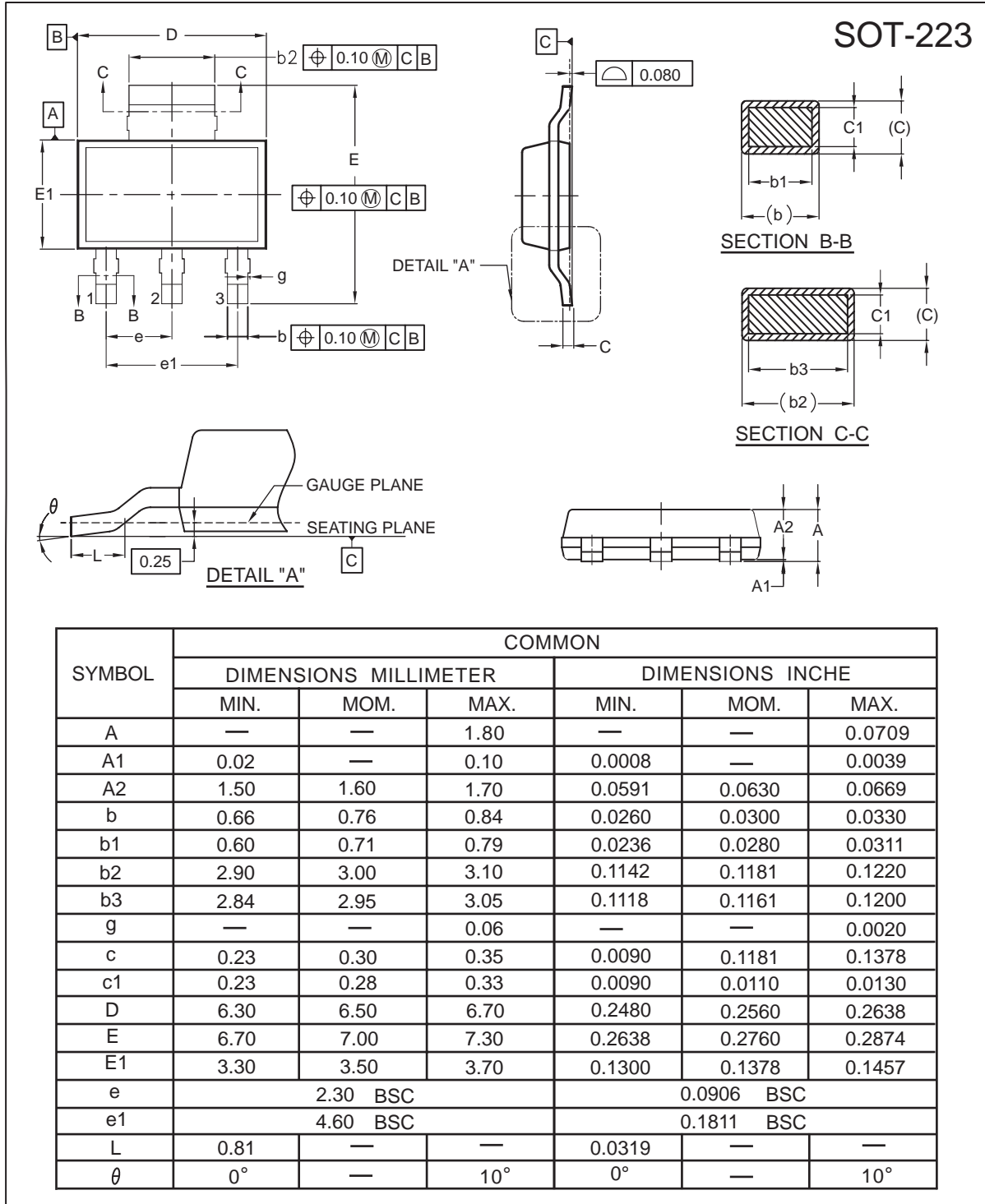
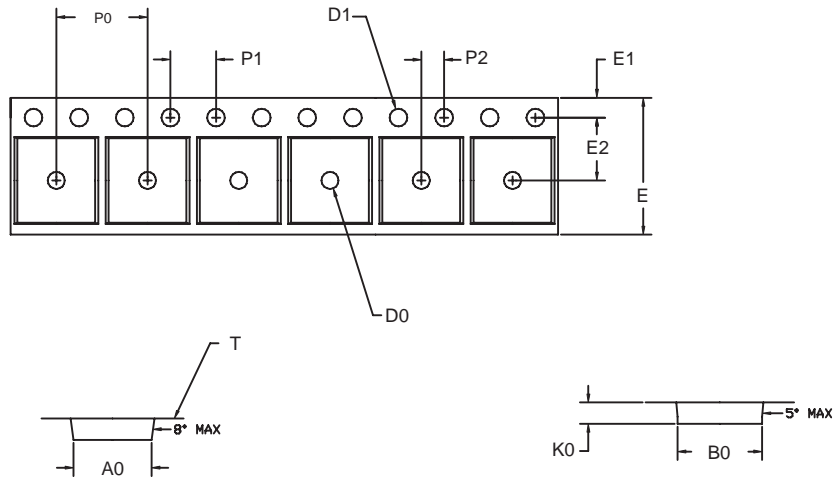


Figure 14. Normalized Thermal Transient Impedance Curve



## SOT-223 Tape and Reel Data

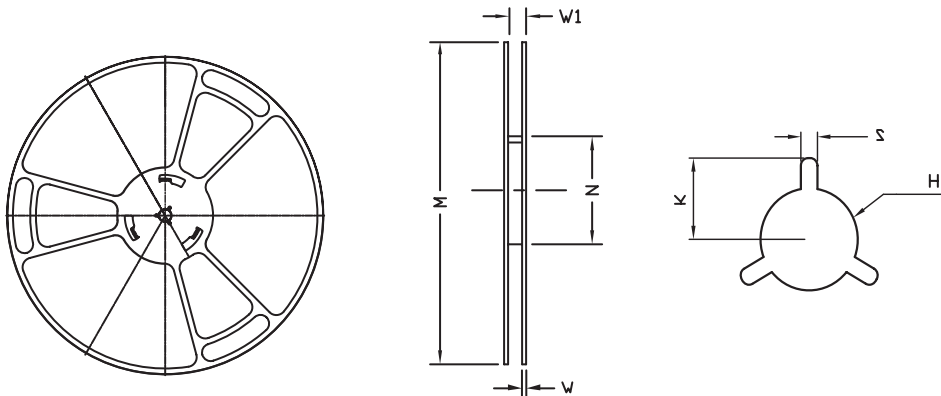
### SOT-223 Carrier Tape



unit:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
---	6.83 ±0.1	7.42 ±0.1	1.88 ±0.1	1.50 +0.25	1.60 +0.1	12.0 +0.3 -0.1	1.75 ±0.1	5.50 ±0.5	8.0 ±0.1	4.00 ±0.1	2.00 ±0.05	0.292 ±0.02

### SOT-223 Reel



UNIT:mm

REEL SIZE	M	N	W	W1	H	K	S	G	R	V
φ 330 ± 0.5	---	φ 97.0 ± 1.0	2.2	13.0 + 1.5	φ 13.0 + 0.5 - 0.2	10.6	2.0 ± 0.5	---	---	---