

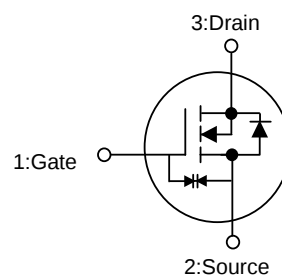
PRODUCT CHARACTERISTICS

VDSS	60V
$R_{DS(on)max}(V_{GS}=10V)$	2.2Ω
$R_{DS(on)max}(V_{GS}=4.5V)$	2.4Ω
ID	0.38A

FEATURES

- * High Density Cell Design for Low $R_{DS(on)}$.
- * Voltage Controlled Small Signal Switch
- * Rugged and Reliable
- * High Saturation Current Capability
- * ESD protected:2000V

SYMBOL



ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	2N7002	SOT-23	3000 pieces/Reel

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified.)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} \leq 1M\Omega$)		V_{DGR}	60	V
Gate Source Voltage	Continuous	V_{GSS}	± 20	V
	Non Repetitive ($t_p < 50\mu s$)	V_{GSS}	± 40	V
Drain Current	Continuous	I_D	380	mA
	Pulsed	I_D	950	mA
Power Dissipation		P_D	200	mW
Derated Above 25°C			1.6	mW/ $^{\circ}\text{C}$
Junction to Case		θ_{JC}	215	$^{\circ}\text{C}/\text{W}$
Junction Temperature		T_J	+ 150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS (T = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =10μA	60	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
Gate-Source Leakage Current	I _{GSSF}	V _{GS} =20V, V _{DS} =0V	-	-	10	μA
	I _{GSSR}	V _{GS} =-20V, V _{DS} =0V	-	-	-10	μA
On characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	1.3	-	2.45	V
Static Drain-Source On-Resistance	R _{DS (ON)}	V _{GS} =10V, I _D =300mA	-	-	2.2	Ω
		V _{GS} =4.5V, I _D =200mA	-	-	2.4	Ω
Dynamic characteristics						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	-	50	pF
Output Capacitance	C _{OSS}		-	-	25	pF
Reverse Transfer Capacitance	C _{RSS}		-	-	5	pF
Turn-On Time	t _{ON}	V _{DD} =30V, R _L =150Ω, I _D =200mA,	-	-	20	nS
Turn-Off Time	t _{OFF}	V _{GS} =10V, R _G =25Ω	-	-	20	nS
Drain-source diode characteristics and maximum ratings						
Maximum Continuous Forward Current	I _S		-	-	300	mA
Maximum Pulsed Forward Current	I _{SM}		-	-	0.95	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =300mA (Note)	-	0.88	1.5	V

Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

■ TEST CIRCUIT AND WAVEFORM

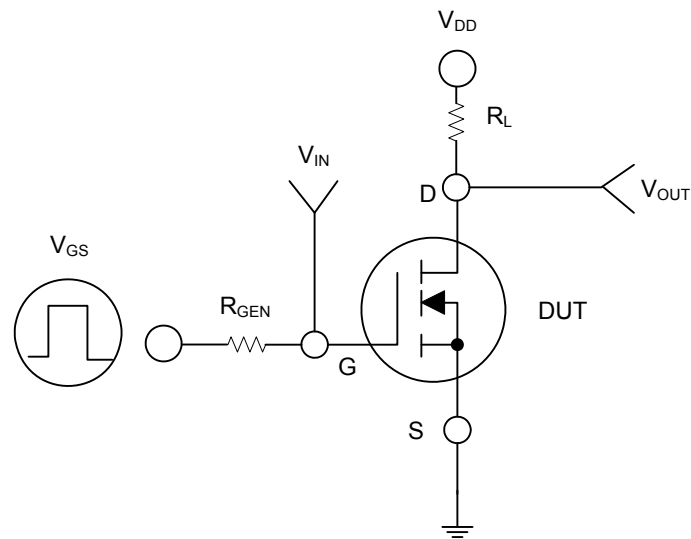


Fig. 1

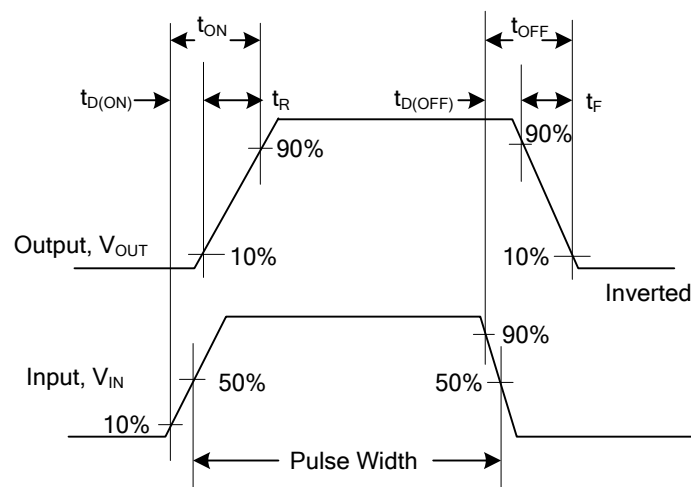
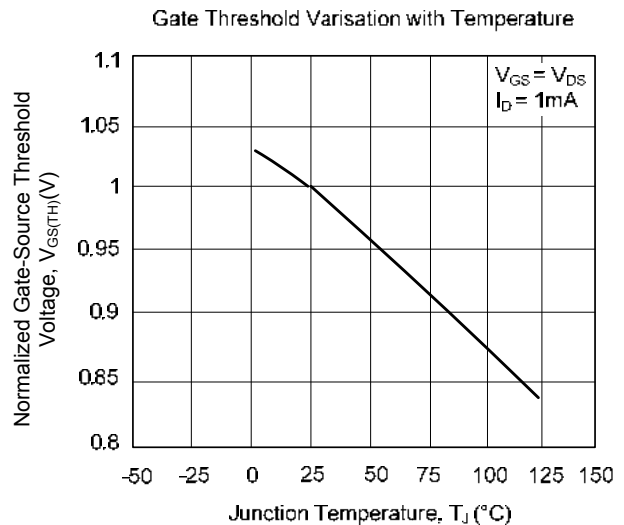
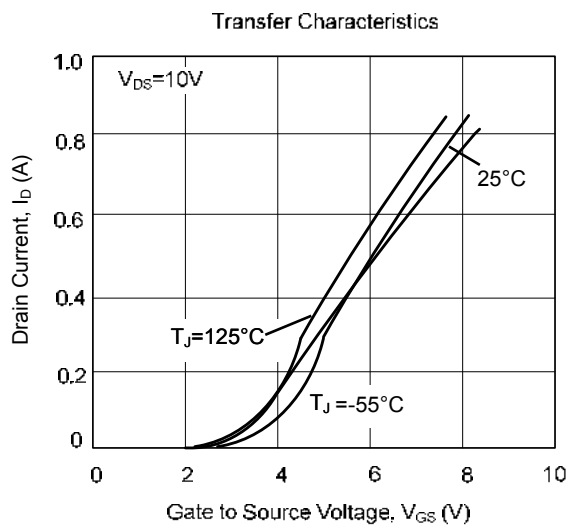
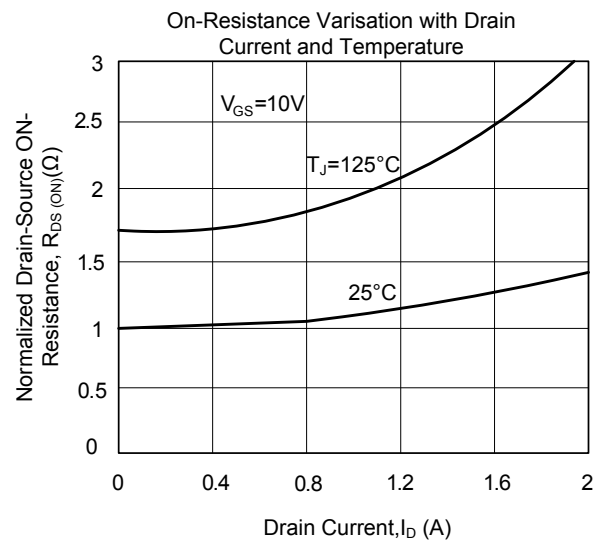
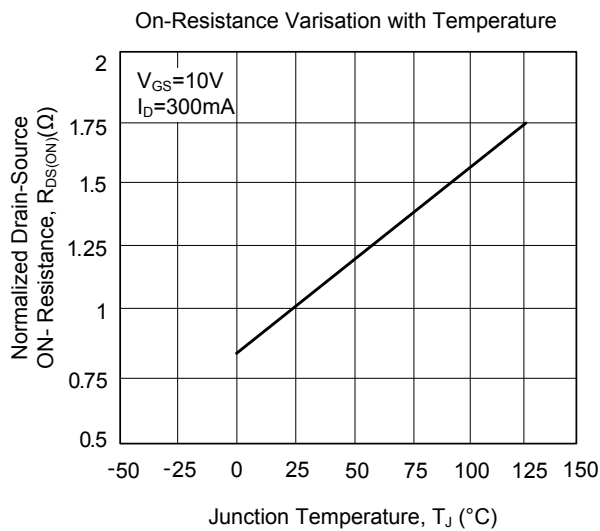
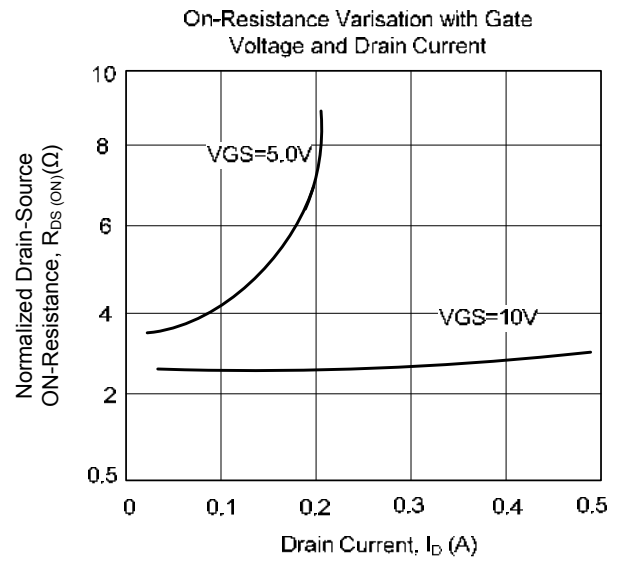
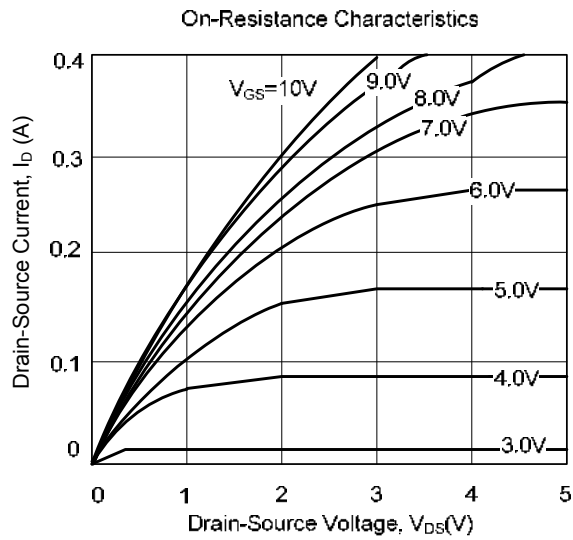


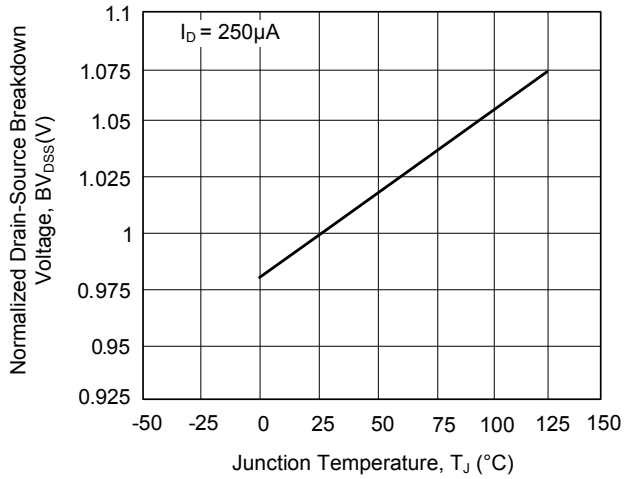
Fig. 2 Switching Waveforms

■ TYPICAL CHARACTERISTICS

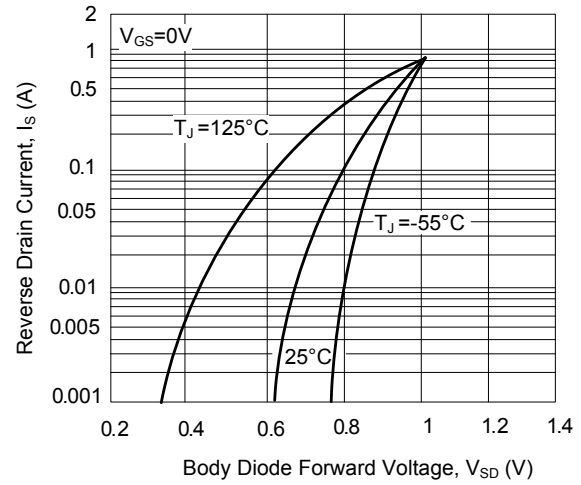


■ TYPICAL CHARACTERISTICS(Cont.)

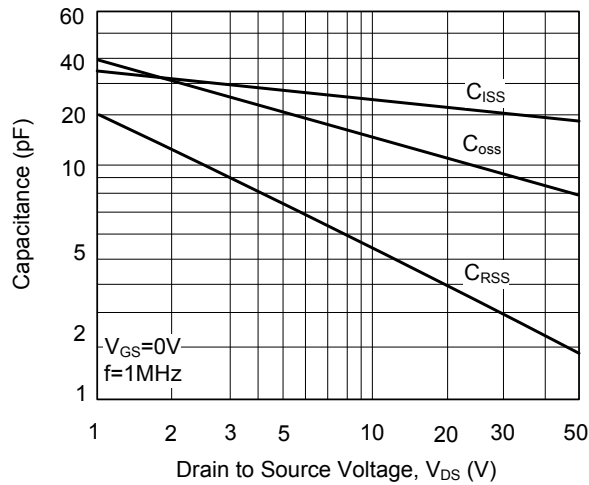
Breakdown Voltage Variation
with Temperature



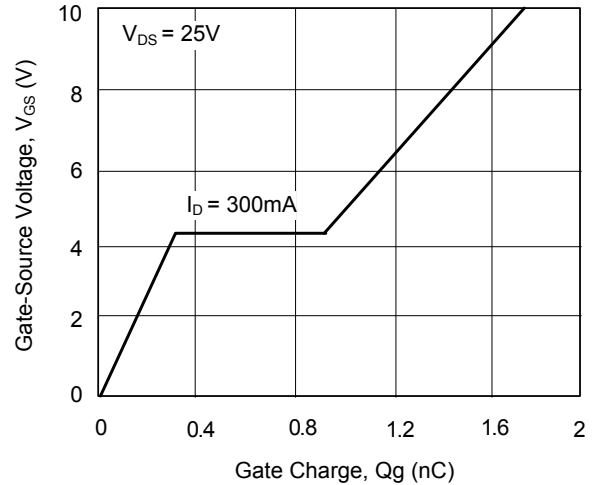
Body Diode Forward Voltage Variation
with Temperature



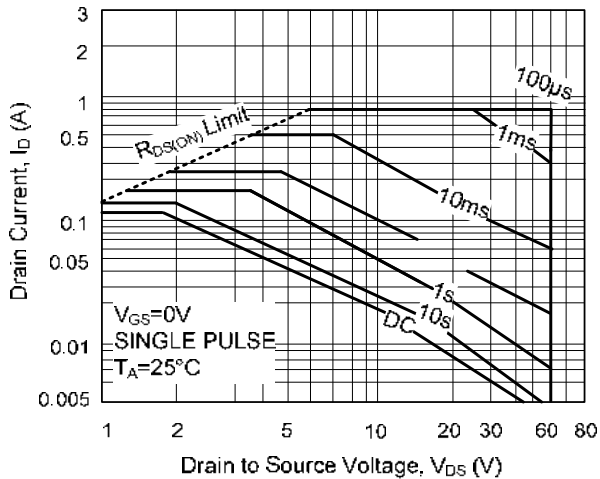
Capacitance Characteristics



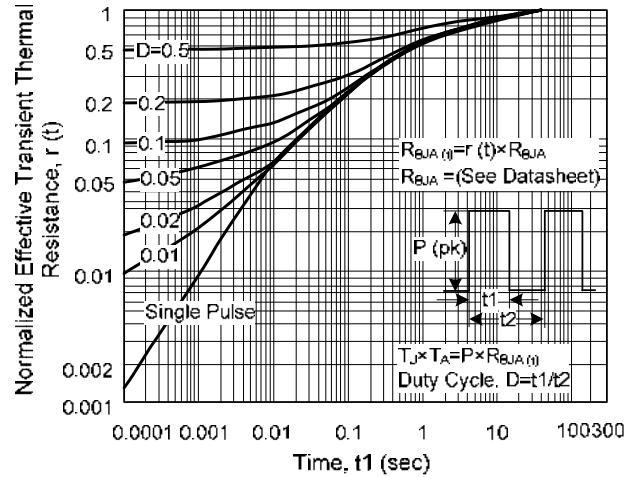
Gate Charge Characteristics



Maximum Safe Operating Area

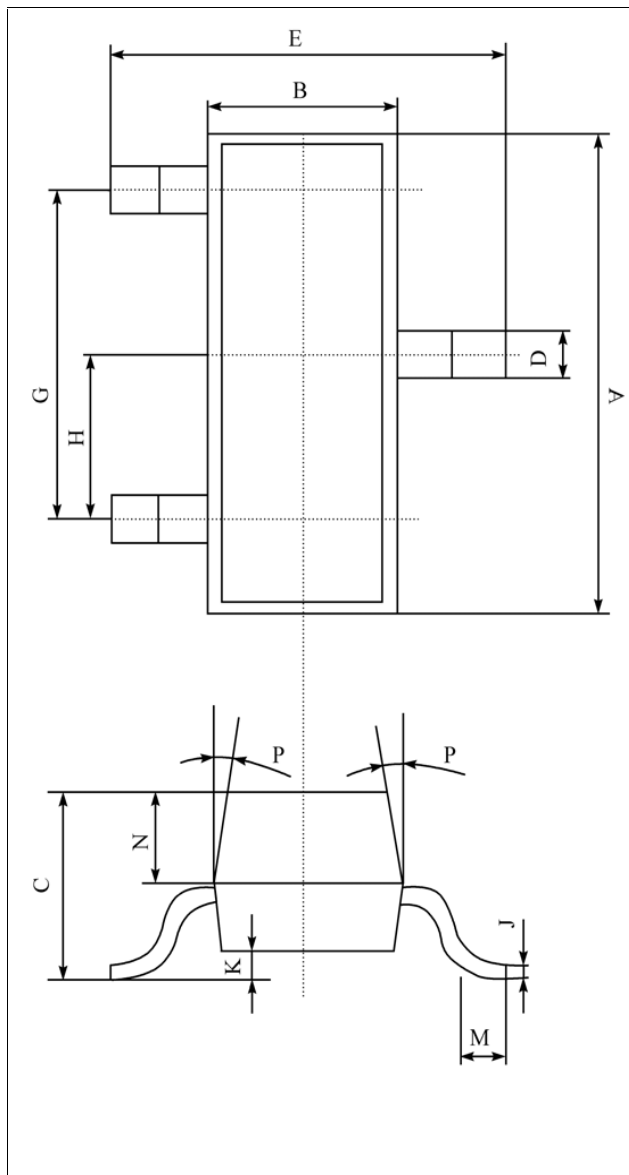


Transient Thermal Response Curve



■ SOT-23 PACKAGE OUTLINE DIMENSIONS

单位 (UNIT) : mm



序号	数值及公差
A	2.90±0.10
B	1.30±0.10
C	1.00±0.10
D	0.40±0.10
E	2.40±0.20
G	1.90±0.10
H	0.95±0.05
J	0.13±0.05
K	0.00-0.10
M	≥0.20
N	0.60±0.10
P	7±2°

Packing

SOT-23 包装规格

SMD片式表面贴封装

包装方式: 载带卷盘包装

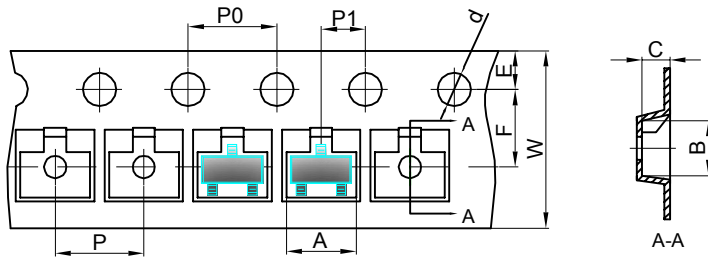
Tape & Reel, 3Kpcs/Reel

每卷数量3000只 (3Kpcs/Reel)

每盒数量45000只 (45Kpcs/BOX)

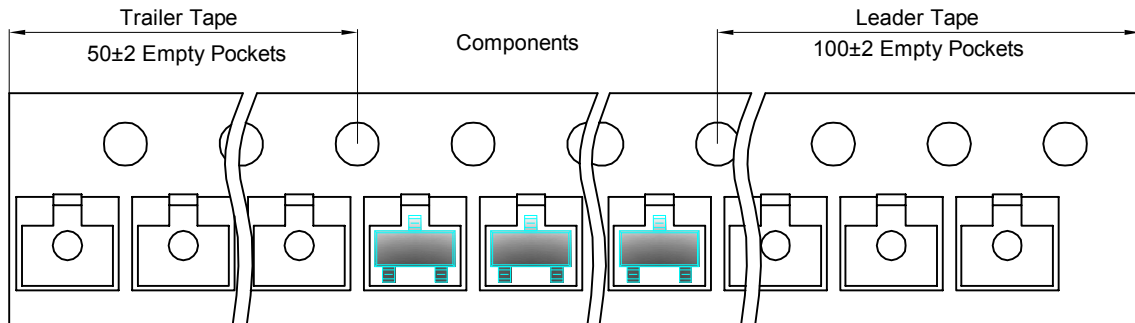
每箱数量180000只 (180Kpcs/Cartons)

SOT-23 EMBOSSED CARRIER TAPE

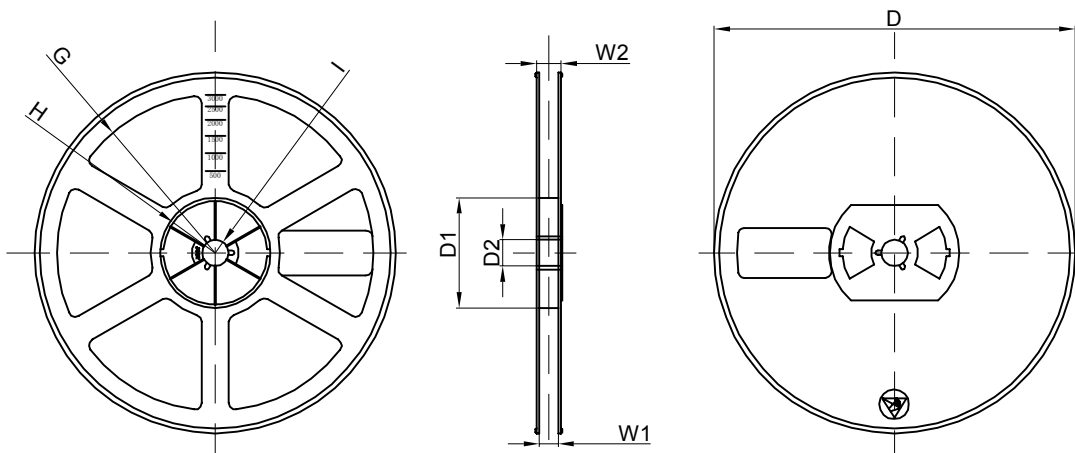


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 TAPE LEADER AND TRAILER



SOT-23 REEL



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	192×192×193	180,000 pcs	404×404×214	