

Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Extremely low threshold voltage
- ☑ Advanced trench cell design

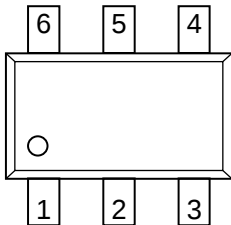
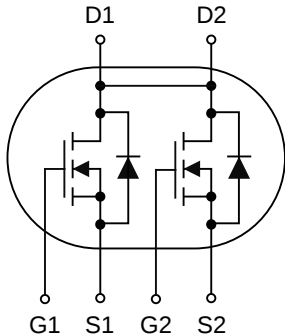
1.2 Applications

- ☑ Portable appliances
- ☑ Battery management

1.3 Quick reference

- ☑ $BV \geq 20\text{ V}$
- ☑ $R_{DS(ON)} \leq 23\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- ☑ $P_{tot} \leq 0.83\text{ W}$
- ☑ $R_{DS(ON)} \leq 25\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$
- ☑ $I_D \leq 6\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Source(S1)	 Top View SOT23-6L	
2	Drain(D1)		
3	Source(S2)		
4	Gate(G2)		
5	Drain(D2)		
6	Gate(G1)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A=25^{\circ}\text{C}$	20	-	V
V_{GS}	Gate-Source Voltage	$T_A=25^{\circ}\text{C}$	-	± 12	V
I_D^*	Drain Current	$T_A=25^{\circ}\text{C}$, $V_{GS}=4.5\text{ V}$	-	6	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A=25^{\circ}\text{C}$, $V_{GS}=4.5\text{ V}$	-	20	A
P_{tot}^*	Total Power Dissipation	$T_A=25^{\circ}\text{C}$	-	0.83	W
		$T_A=100^{\circ}\text{C}$	-	0.3	
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
I_S^*	Diode Forward Current	$T_A=25^{\circ}\text{C}$	-	6	A
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient		-	150	$^{\circ}\text{C/W}$

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
KJ8205	8205 YYWW YYWW: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ8205	SOT23-6	7"	8 mm	3000	

Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

6. Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	0.5	-	1.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =16 V, V _{GS} =0 V	-	-	1	μA
		T _J =85°C	-	-	30	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±10 V, V _{DS} =0 V	-	-	± 100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =4.5 V, I _{DS} =3 A	-	21	23	mΩ
		V _{GS} =2.5 V, I _{DS} =2 A	-	23	25	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =3 A, V _{GS} =0 V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =3 A, dI _{SD} /dt=100 A/μs	-	38	-	ns
Q _{rr}	Reverse Recovery Charge		-	17	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =10 V, Frequency=1 MHz	-	369	-	pF
C _{oss}	Output Capacitance		-	73	-	
C _{rss}	Reverse Transfer Capacitance		-	62	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =10 V, V _{GEN} =4.5 V, R _G =4.5 Ω, R _L =3.3 Ω, I _{DS} =3 A	-	3.2	-	ns
t _r	Turn-on Rise Time		-	26	-	
t _{d(off)}	Turn-off Delay Time		-	68	-	
t _f	Turn-off Fall Time		-	35	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =10 V, V _{GS} =4.5 V, I _{DS} =3 A	-	5.8	-	nC
Q _{gs}	Gate-Source Charge		-	1.3	-	
Q _{gd}	Gate-Drain Charge		-	1.5	-	

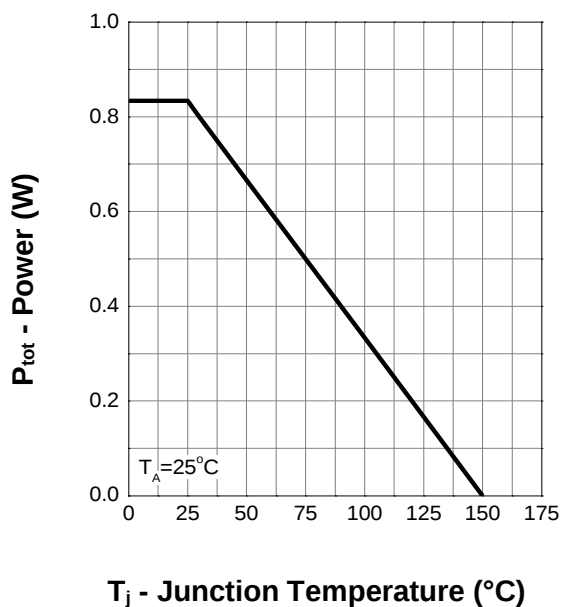
Notes:

a. Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%

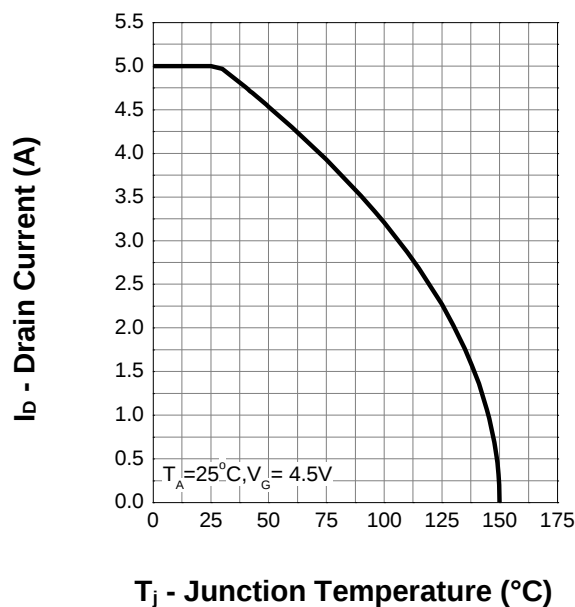
b. Guaranteed by design, not subject to production testing

7. Typical Characteristics

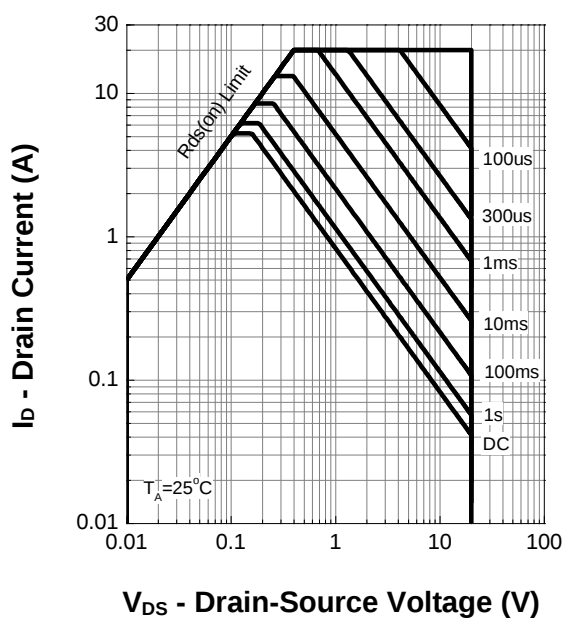
Power Capability



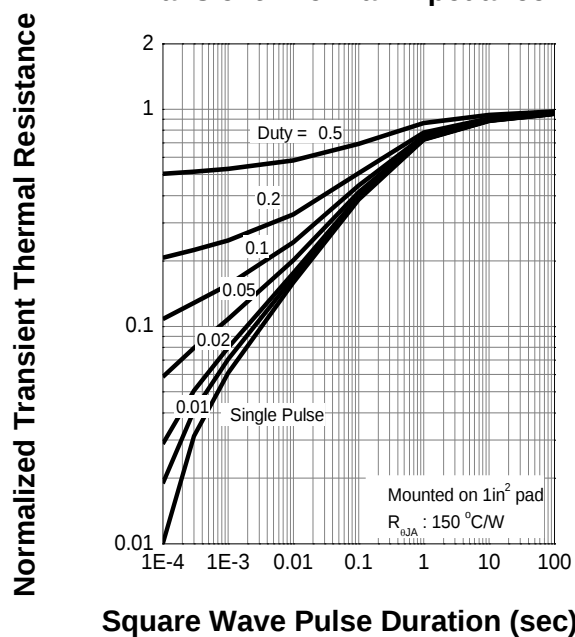
Current Capability



Safe Operation Area

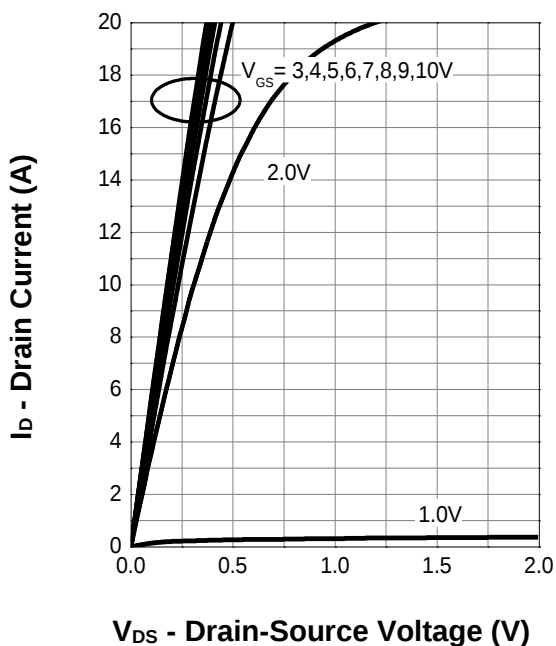


Transient Thermal Impedance

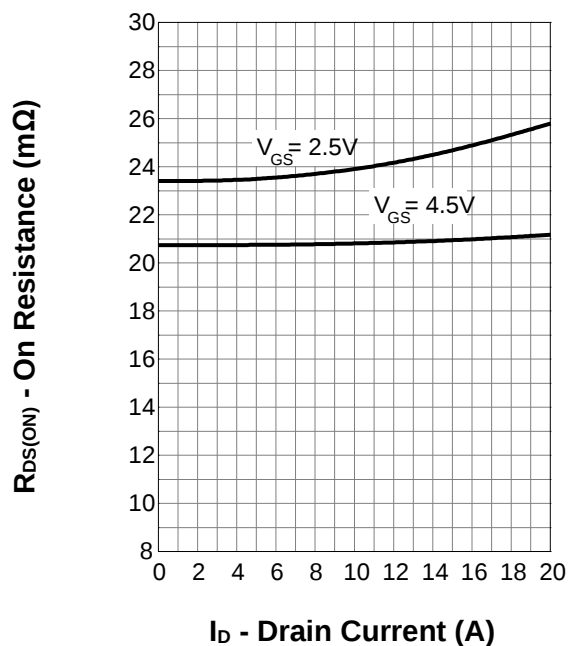


7. Typical Characteristics (cont.)

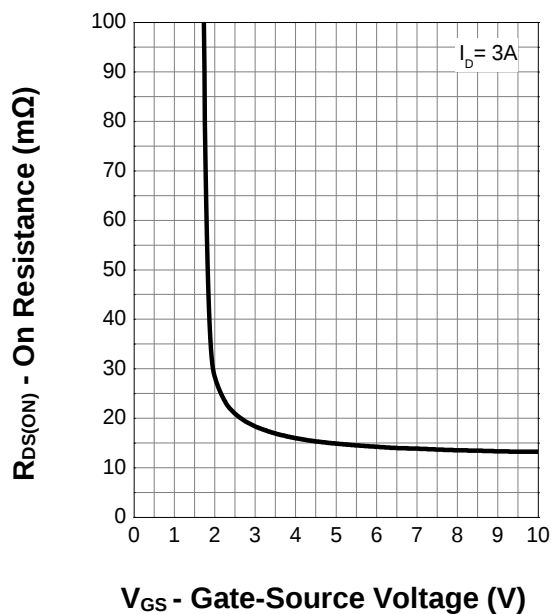
Output Characteristics



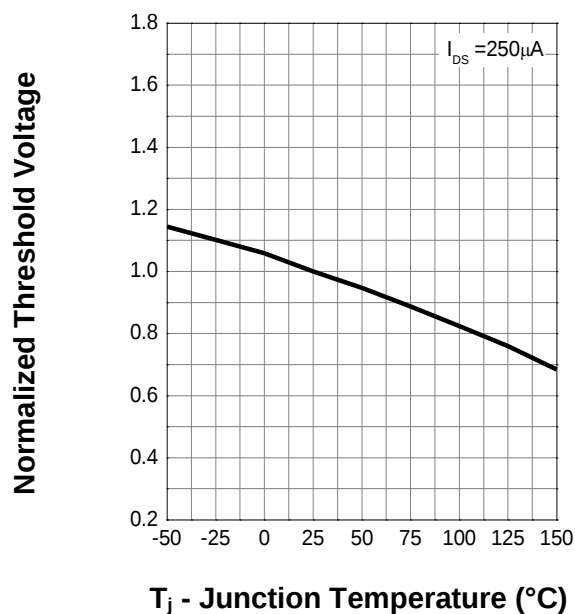
On Resistance



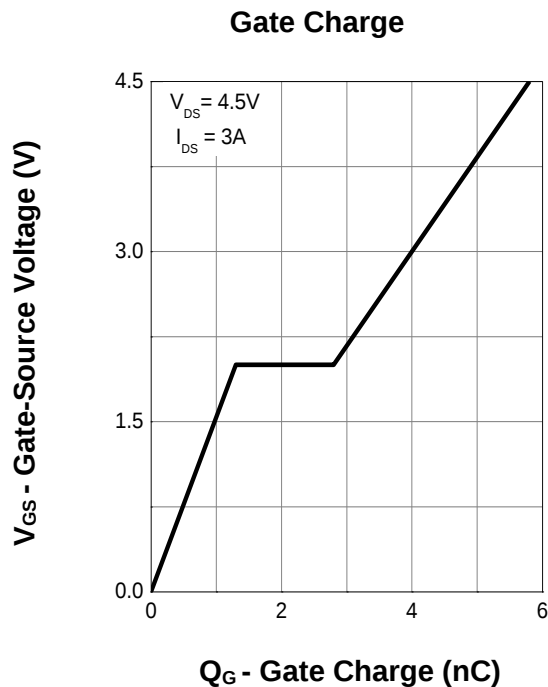
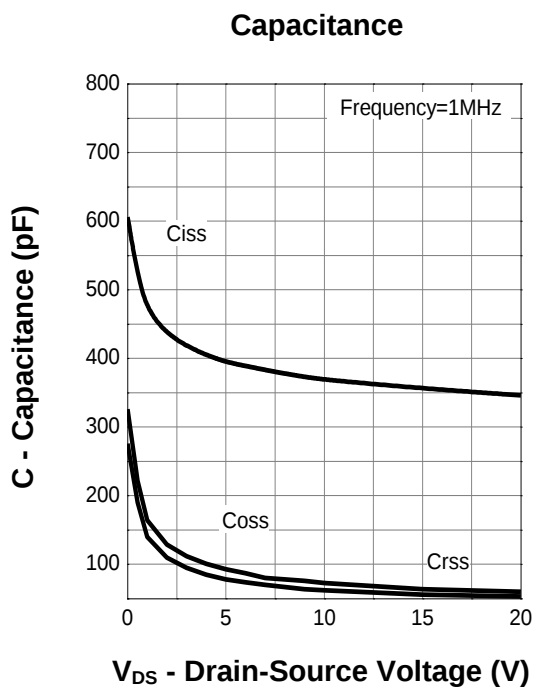
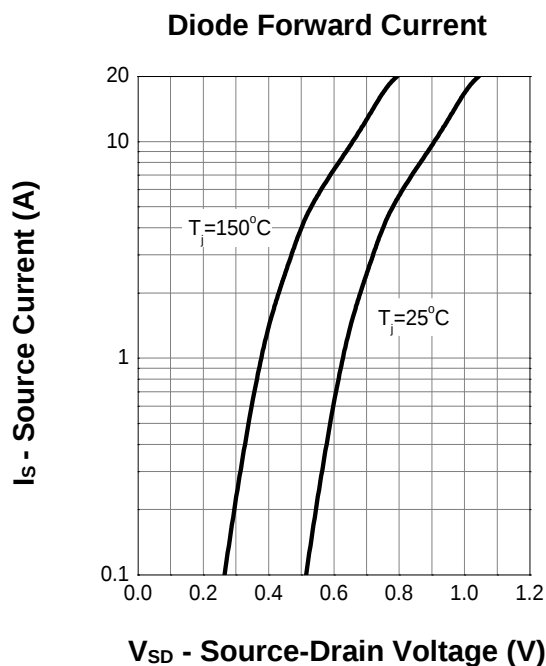
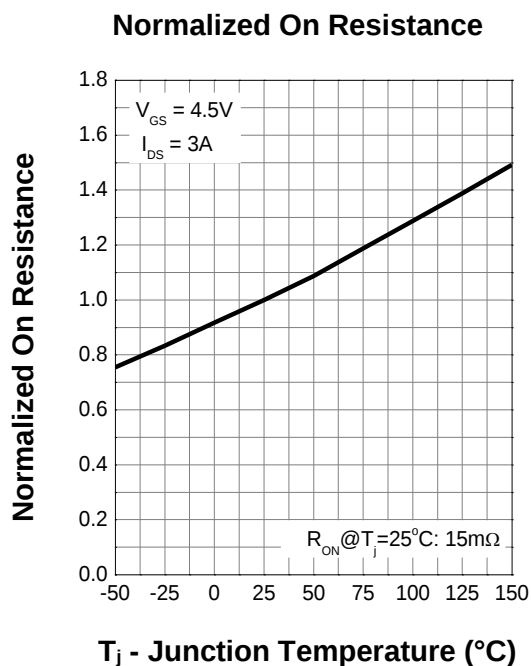
Transfer Characteristics



Normalized Threshold Voltage

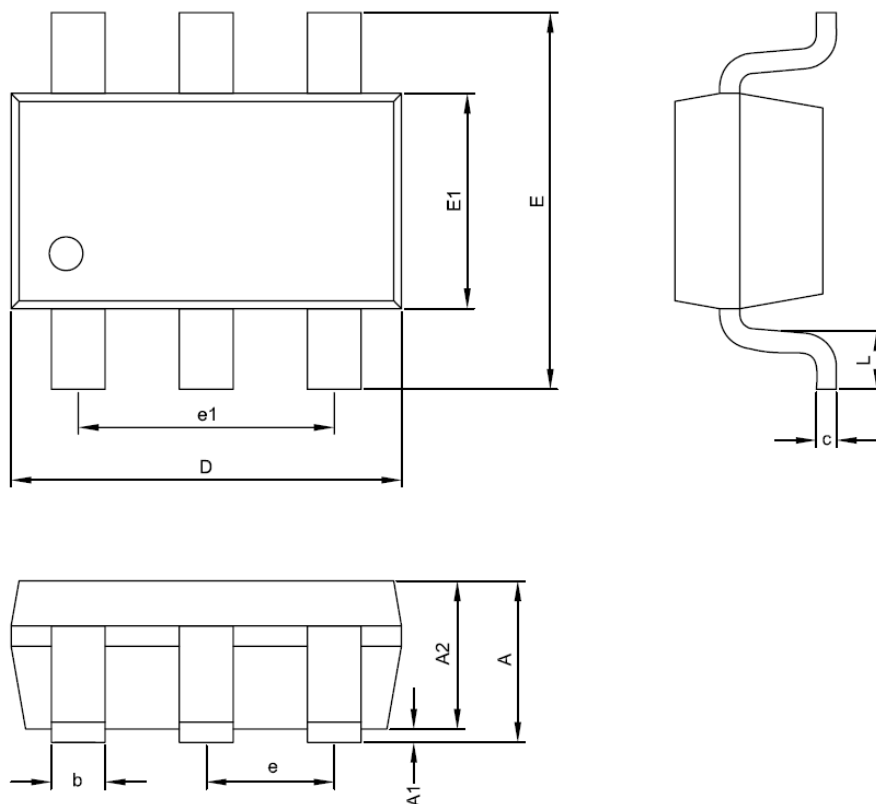


7. Typical Characteristics (cont.)



8. Package Dimensions

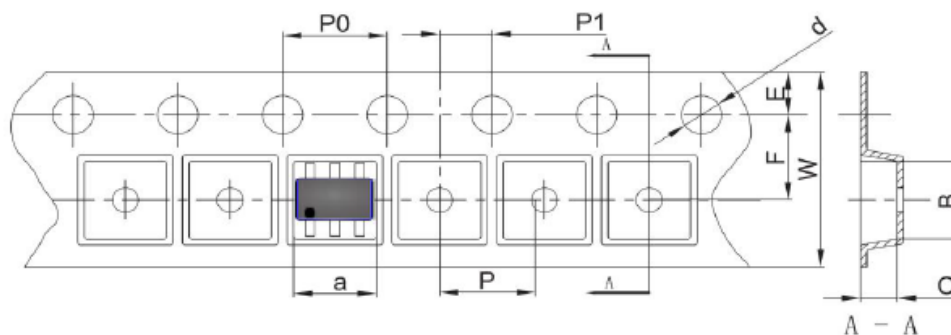
SOT23-6L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	—	0.90
A1	0.00	0.10
A2	0.70	0.80
D	2.90 BSC	
E	2.80 BSC	
E1	1.50	1.70
c	0.08	0.25
b	0.30	0.51
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60

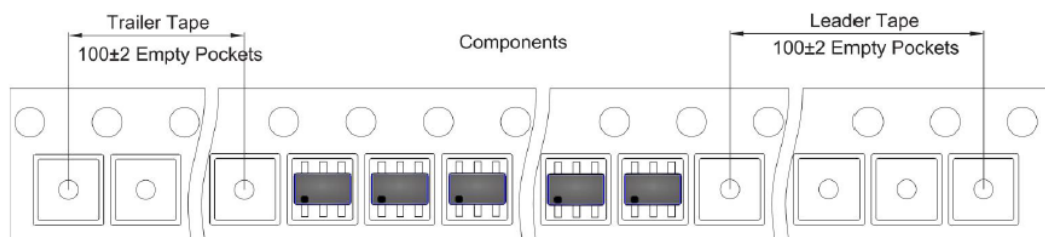
9. Tape and Reel Dimensions

SOT-23-6 Embossed Carrier Tape

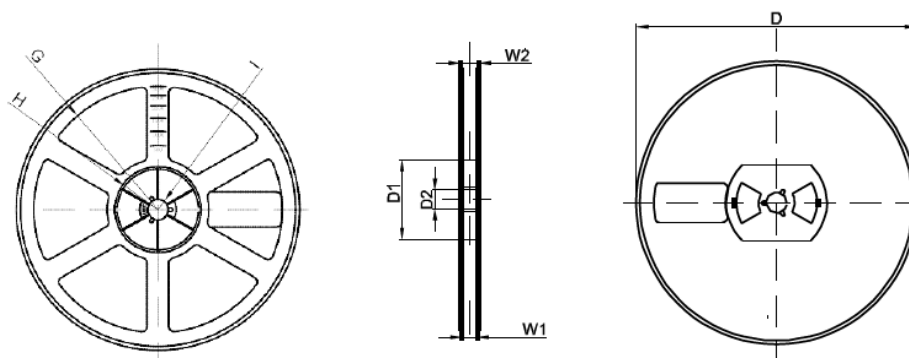


DIMENSIONS ARE IN MILLIMETER										
TYPE	a	B	C	d	E	F	P0	P	P1	W
SOT23-6	3.17	3.23	1.37	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23-6 Tape Leader and Trailer



SOT-23-6 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø180	60.00	13.00	R78	R25.60	R6.50	9.50	13.10
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1