

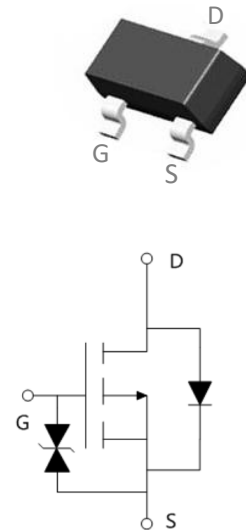
Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-60V, I_D=-0.2A, R_{DS(on)} < 4000m\Omega @ V_{GS}=-10V$ (Typ: $3300m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.
- 6) ESD Protection
- 7) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
BSS84	84K	SOT-23	3000 pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_A=25^\circ\text{C}^1$	-0.2	A
	Continuous Drain Current- $T_A=100^\circ\text{C}^1$	-0.14	
I_{DM}	Pulsed Drain Current ²	-0.8	
P_D	Power Dissipation	0.35	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	-60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-60V	---	---	-1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 10	μ A
On Characteristics						
V _{GS(th)}	Gate-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-1.65	-2	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =-10V, I _D =-0.15A	---	3300	4000	m Ω
		V _{GS} =-4.5V, I _D =-0.1A	---	4200	5000	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	25	---	pF
C _{oss}	Output Capacitance		---	3.6	---	
C _{rss}	Reverse Transfer Capacitance		---	2	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =-30V, I _D =-0.1A, R _{ENG} =3 Ω ,V _{GS} =-10V	---	4	---	ns
t _r	Rise Time		---	15	---	ns
t _{d(off)}	Turn-Off Delay Time		---	99	---	ns
t _f	Fall Time		---	39	---	ns
Q _g	Total Gate Charge	V _{GS} =-30V, V _{DS} =-10V, I _D =-0.1A	---	1	---	nC
Q _{gs}	Gate-Source Charge		---	0.12	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	0.1	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =-0.1A	---	---	-1.2	V
I _S	Continuous Drain Current	V _D =V _G =0V	---	---	-0.2	A
I _{SM}	Pulsed Drain Current		---	---	-0.8	A

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Characteristics: ($T_A=25^\circ C$ unless otherwise noted)

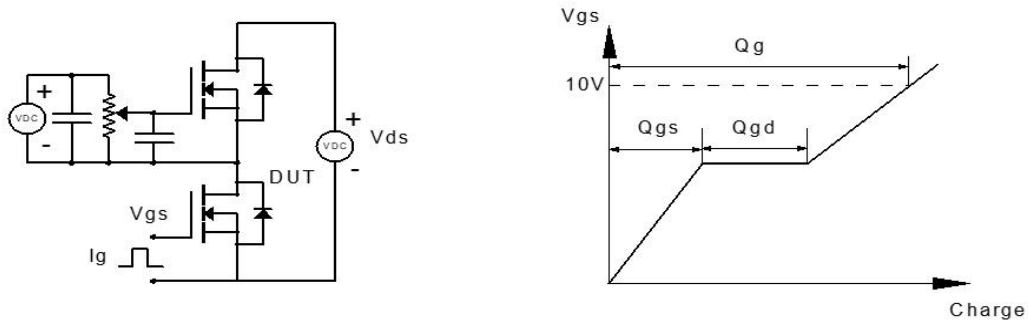


Figure 1: Gate Charge Test Circuit & Waveform

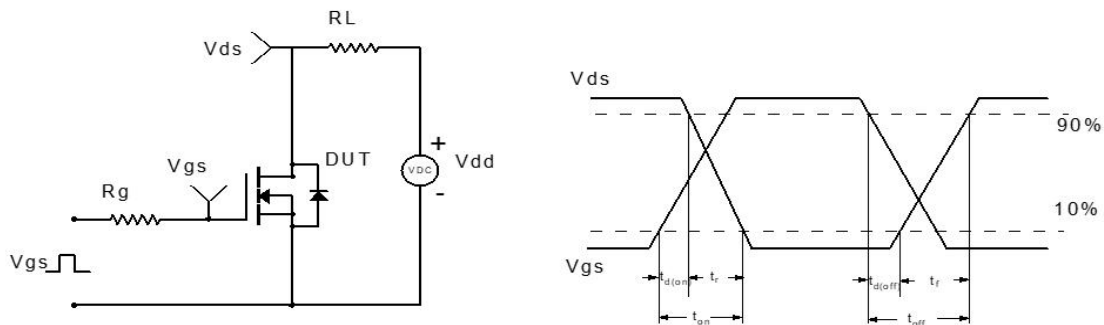


Figure 2: Resistive Switching Test Circuit & Waveform

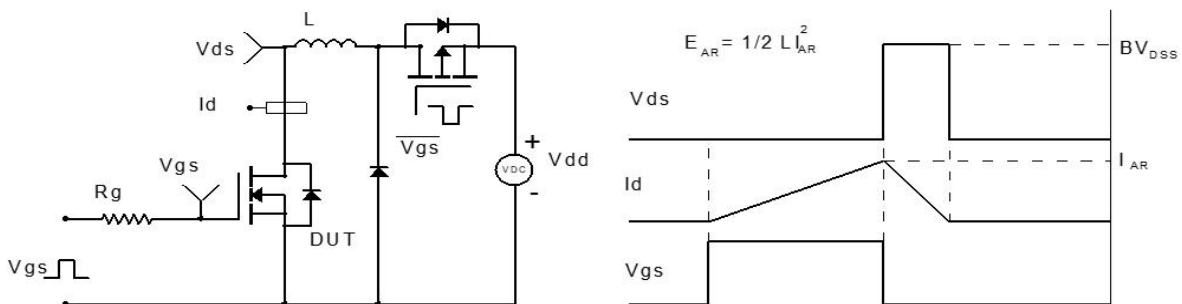


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

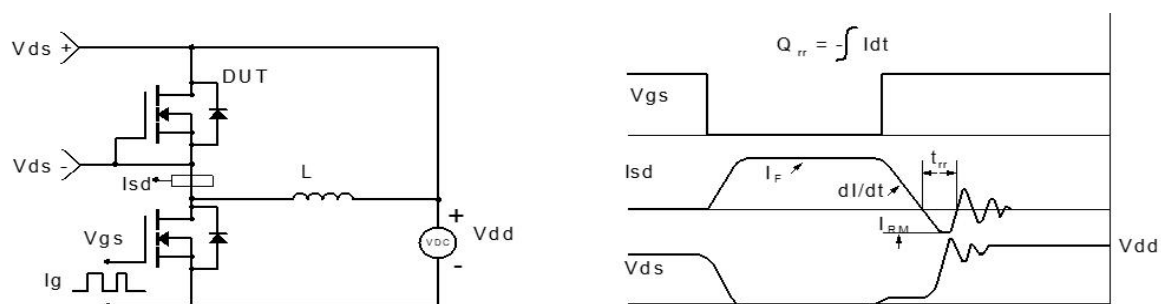
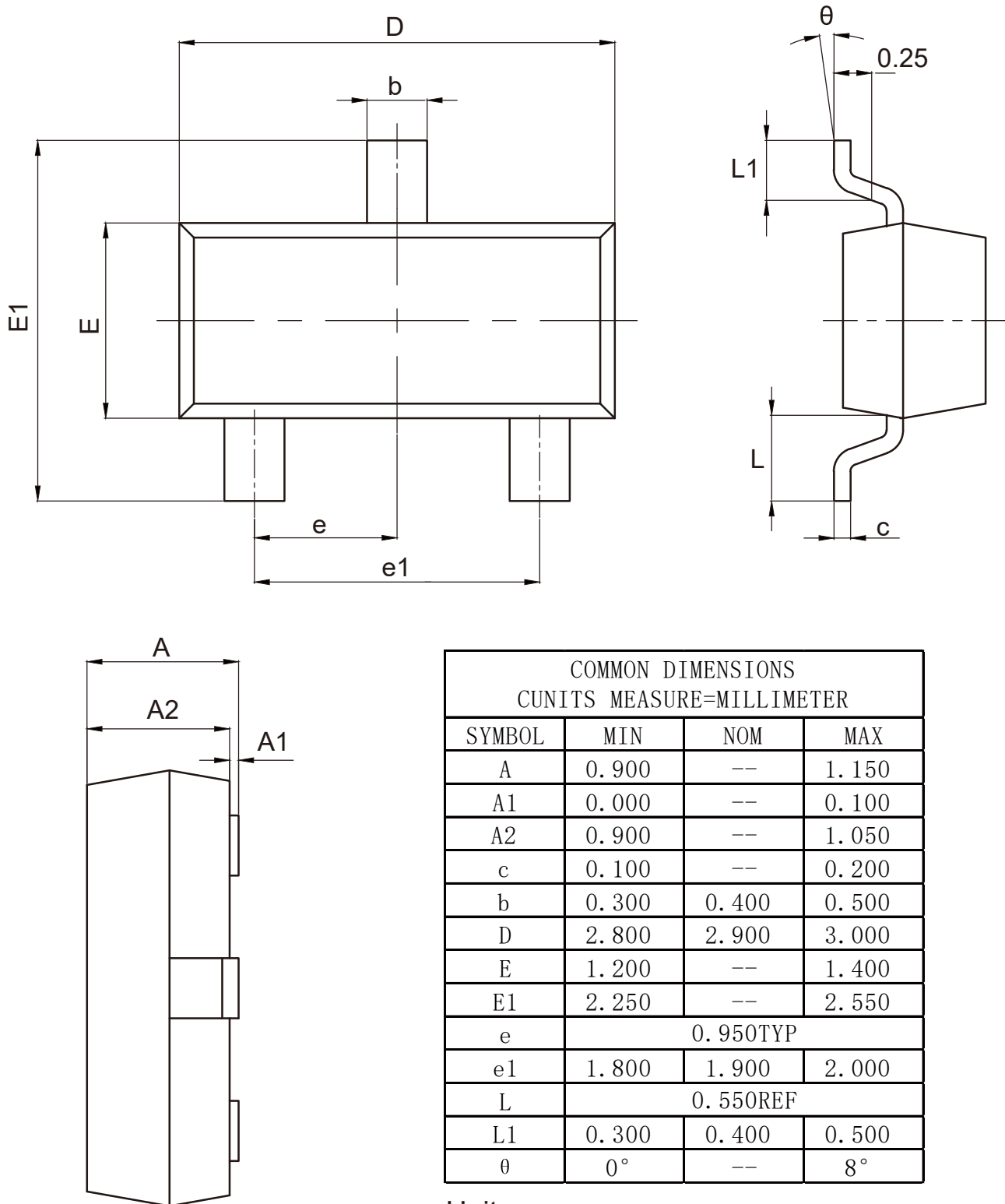


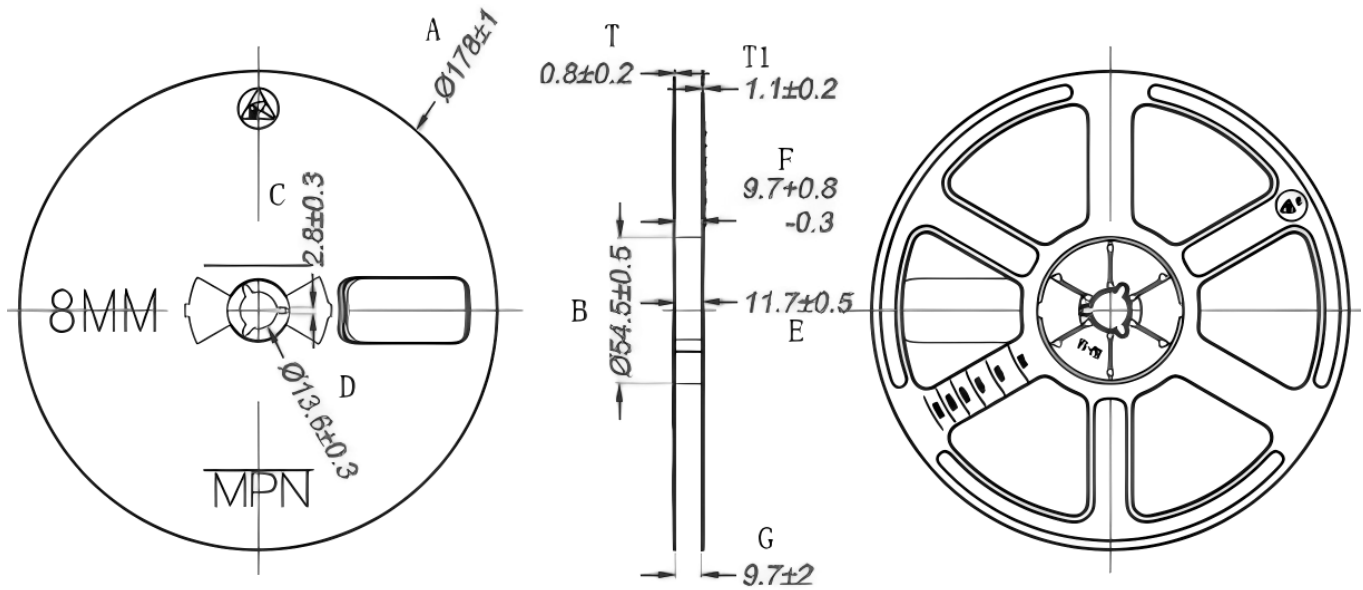
Figure 4: Diode Recovery Test Circuit & Waveform

SOT-23Package Outline Data


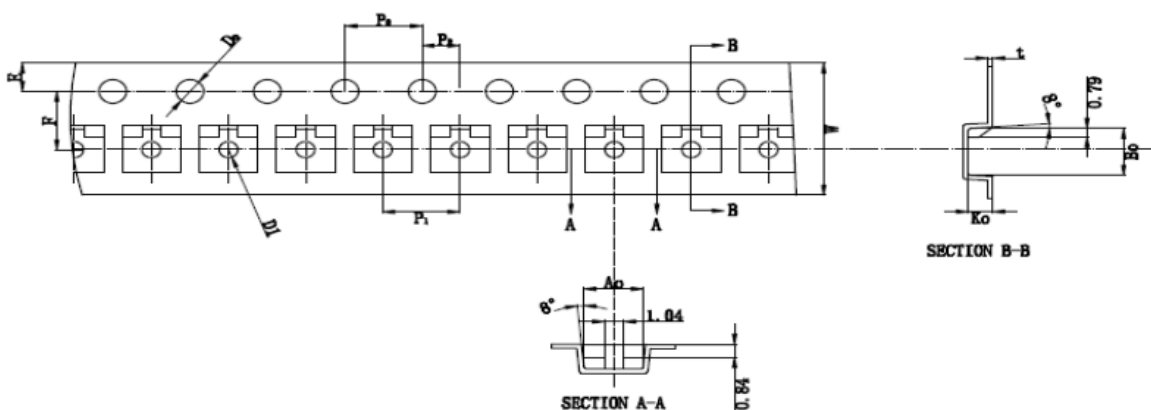
Unit:mm

Tape & Reel Information

Dimensions in mm

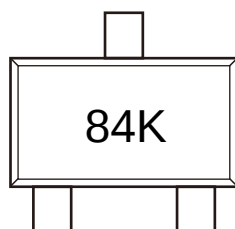


PKG TYPE	W	P	E	F	D	D1	Po	Po10	P2	A0	B0	K0	T
SOT-23	8.00	4.00	1.75	3.50	1.55	1.00	4.00	40.00	2.00	3.17	2.77	1.28	0.20
Tolerance	+0.3/-0.1	± 0.1	± 0.1	± 0.05	± 0.1	± 0.1	± 0.1	± 0.2	± 0.05	± 0.1	± 0.1	± 0.1	± 0.03



Pulling direction 

Marking Information:



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2025-05-06	Release of final version

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