KODENSHI AUK

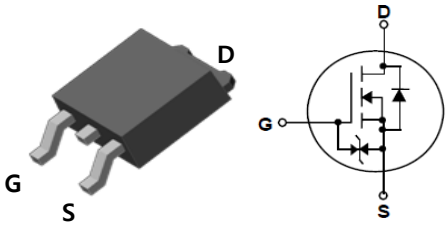
SJMN850R80ZD

Super Junction MOSFET

N-Channel Super Junction MOSFET

Features

- Drain-Source voltage: V_{DS}=850V (@T_J=150°C)
- Low drain-source On resistance: $R_{DS(on)}$=0.85Ω (Max.)
- Built-in ESD Diode
- RoHS compliant and Halogen free device
- 100% avalanche tested

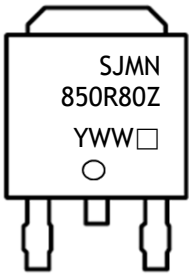


TO-252

Ordering Information

Part Number	Marking	Package
SJMN850R80ZD	SJMN850R80Z	TO-252

Marking Information



Column 1, 2: Device Code
Column 3: Production Information
e.g.) YWW□
-. YWW: Date Code (year, week)
-. □: Factory Management Code

Absolute maximum ratings (T_C=25°C unless otherwise noted)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DSS}		800	V
Gate-source voltage	V_{GSS}		±20	V
Drain current (DC) (Note 1)	I_D	T_c=25°C	6.6	A
		T_c=100°C	4.2	A
Drain current (Pulsed) (Note 1)	I_{DM}		19.8	A
Single pulsed avalanche energy (Note 2)	E_{AS}		90	mJ
Single avalanche current (Note 2)	I_{AS}		1.4	A
Diode dv/dt ruggedness (Note 3)	dv/dt		15	V/ns
MOSFET dv/dt ruggedness (Note 4)	dv/dt		50	V/ns
Power dissipation	P_D		66	W
Gate to source ESD (Human Body Model)	$V_{ESD(G-S)}$		2000	V
Junction temperature	T_J		150	°C
Storage temperature range	T_{stg}		-55~150	°C

Thermal Characteristics

Characteristic	Symbol	Rating	Unit
Thermal resistance, junction to case	$R_{th(j-c)}$	Max. 1.89	°C/W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	Max. 62.5	

Electrical Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	I_D=1mA, V_{GS}=0	800	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=220uA, V_{DS}=V_{GS}	2	-	4	V
Drain-source cut-off current	I_{DSS}	V_{DS}=800V, V_{GS}=0V	-	-	1	uA
		V_{DS}=800V, T_c=150°C	-	-	100	uA
Gate leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±1	uA
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1.6A	-	0.71	0.85	Ω
Input capacitance	C_{iss}	V_{DS}=200V, V_{GS}=0V, f=1.0MHz	-	605	-	pF
Output capacitance	C_{oss}		-	16	-	
Reverse transfer capacitance	C_{rss}		-	1	-	
Turn-on delay time (Note 5)	$t_{d(on)}$	V_{DD}=400V, I_D=2.8A, R_G=25Ω	-	40	-	ns
Rise time (Note 5)	t_r		-	48	-	
Turn-off delay time (Note 5)	$t_{d(off)}$		-	68	-	
Fall time (Note 5)	t_f		-	45	-	
Total gate charge (Note 6)	Q_g	V_{DS}=640V, V_{GS}=10V, I_D=2.8A	-	15	-	nC
Gate-source charge (Note 6)	Q_{gs}		-	6	-	
Gate-drain charge (Note 6)	Q_{gd}		-	2	-	

Source-Drain Diode Ratings and Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	6.6	A
Source current (Pulsed)	I_{SM}		-	-	19.8	A
Forward voltage	V_{SD}	V_{GS}=0V, I_S=2.8A	-	-	1.3	V
Reverse recovery time (Note 5,6)	t_{rr}	I_S=2.8A, V_{GS}=0V dI_F/dt=-100A/us	-	289	-	ns
Reverse recovery charge (Note 5,6)	Q_{rr}		-	1.7	-	uC

Note:
1. Calculated continuous current based on maximum allowable junction temperature
2. L=86mH, I_{AS}=1.4A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
3. I_S≤6.6A, V_{DS}≤400V, dIs/dt≤100A/us, T_J=25°C
4. V_{DS}≤400V, I_S≤6.6A
5. Guaranteed by design, not subject to production testing
6. Pulse test: Pulse width≤300us, Duty cycle≤2%

Typical Characteristics Curve

Fig. 1 I_D - V_{DS}

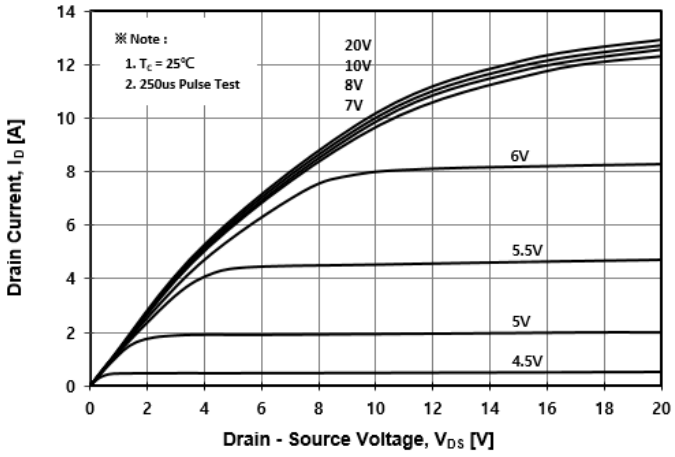


Fig. 2 I_D - V_{GS}

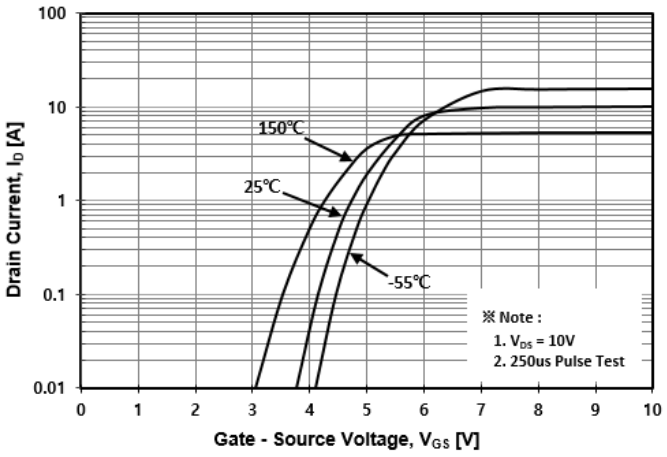


Fig. 3 $R_{DS(ON)}$ - I_D

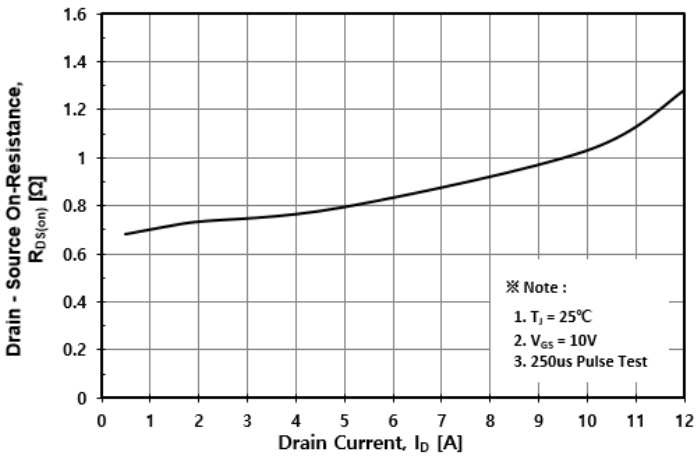


Fig. 4 I_S - V_{SD}

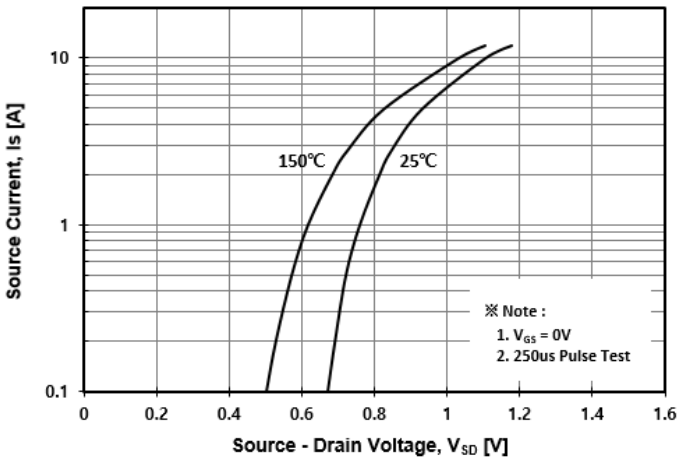


Fig. 5 Capacitance - V_{DS}

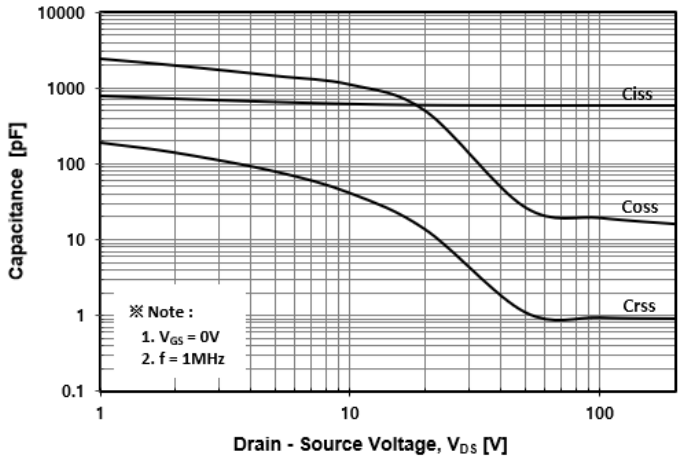
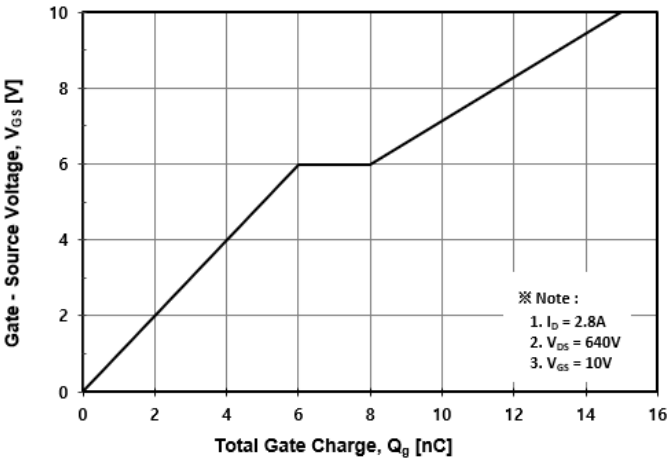


Fig. 6 V_{GS} - Q_G



Typical Characteristics Curve (Continue)

Fig. 7 BV_{DSS} - T_J

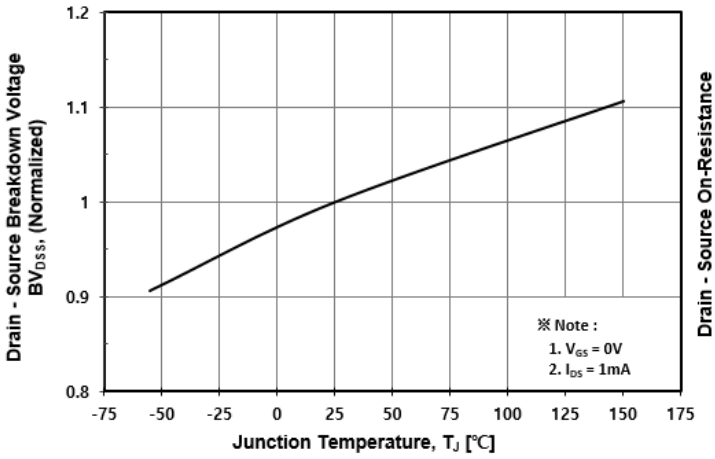


Fig. 8 $R_{DS(ON)}$ - T_J

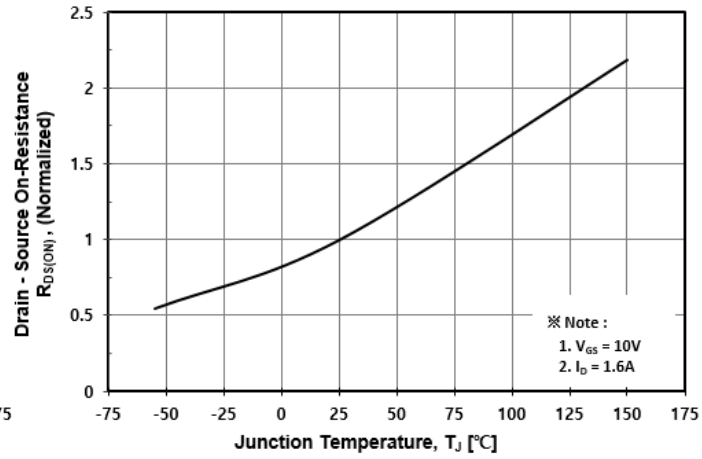


Fig. 9 I_D - T_C

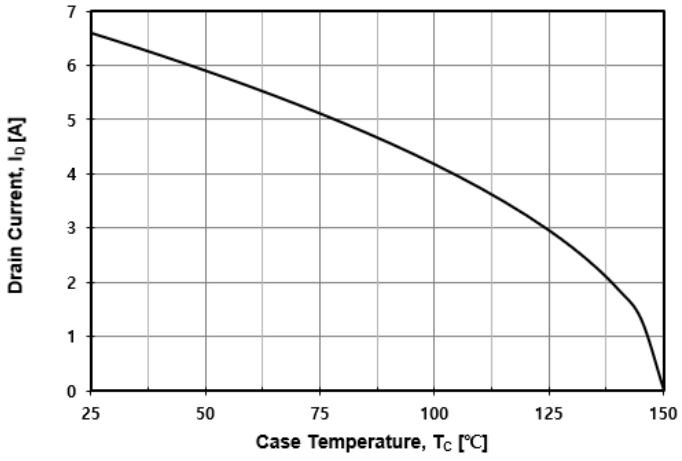


Fig. 10 Safe Operating Area

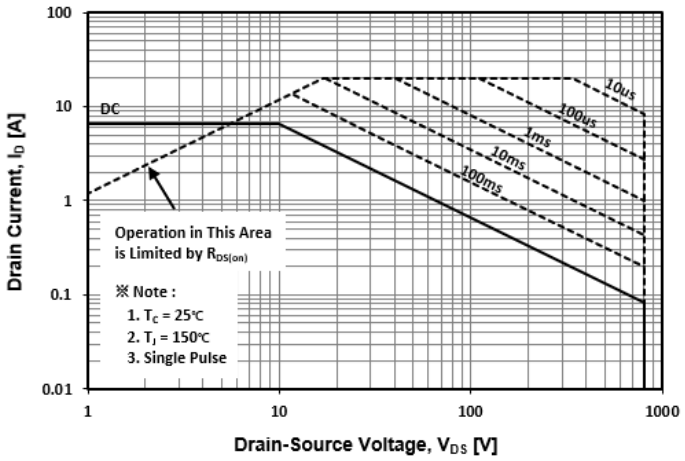


Fig. 11 Transient Thermal Impedance

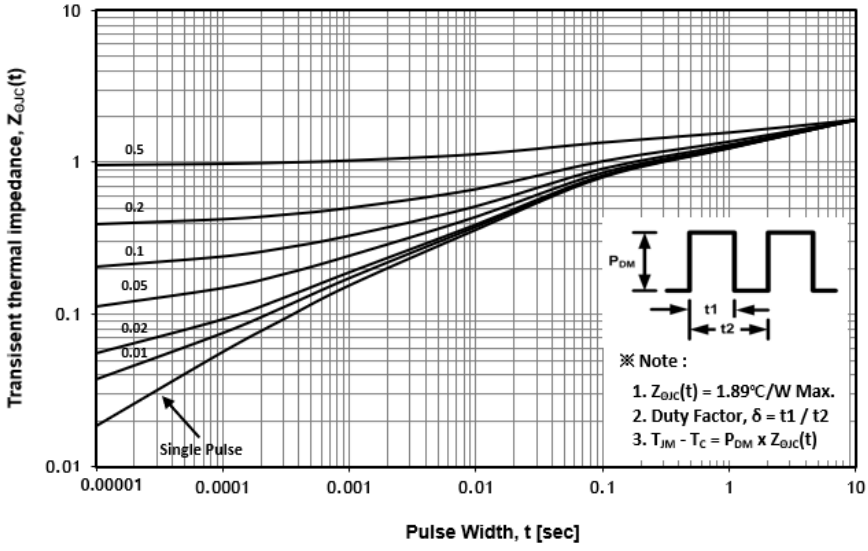
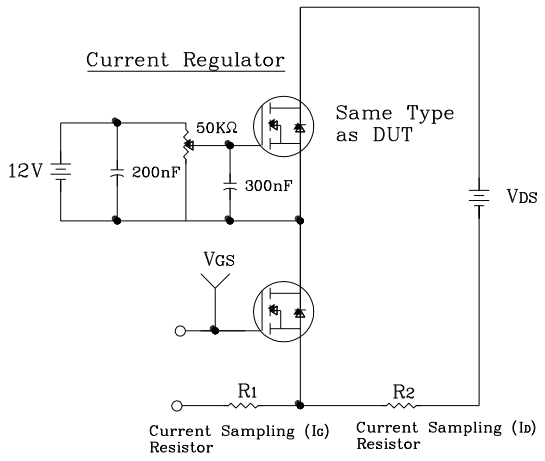


Fig. 12 Gate Charge Test Circuit & Waveform



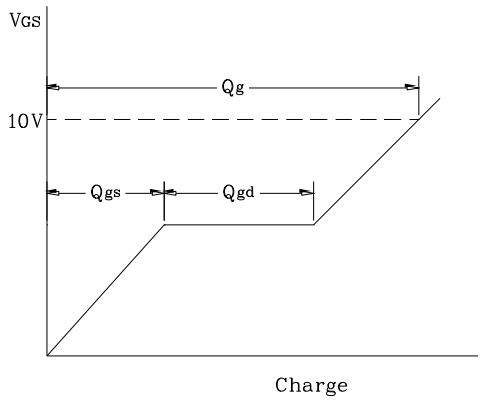
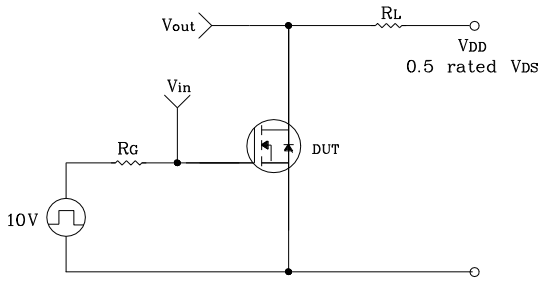


Fig. 13 Resistive Switching Test Circuit & Waveform



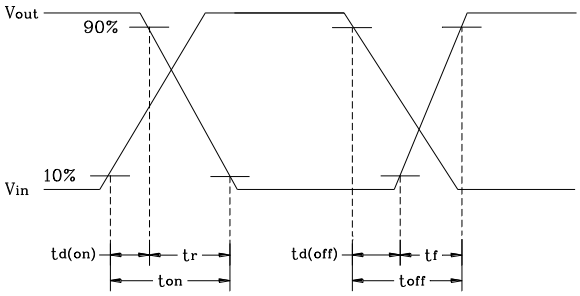
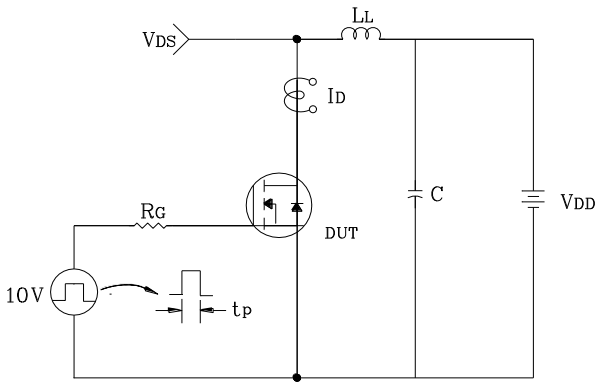


Fig. 14 E_{AS} Test Circuit & Waveform



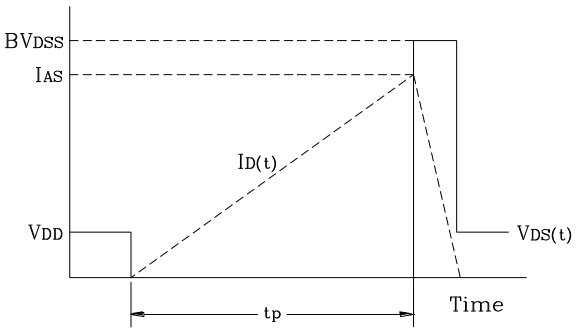
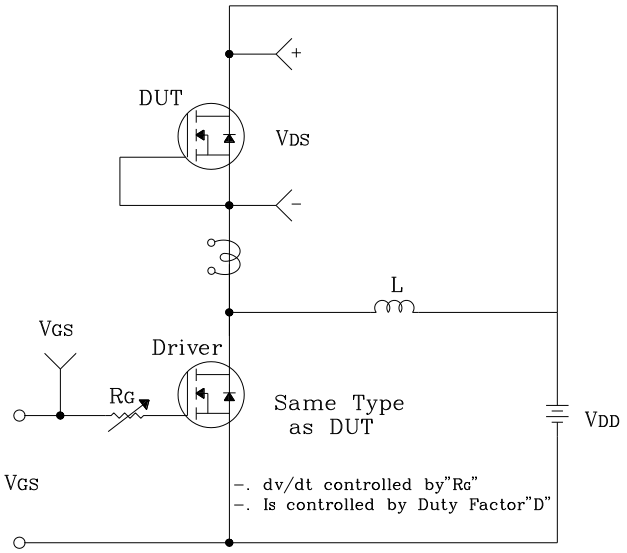
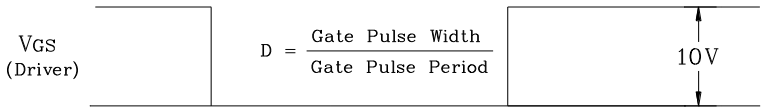
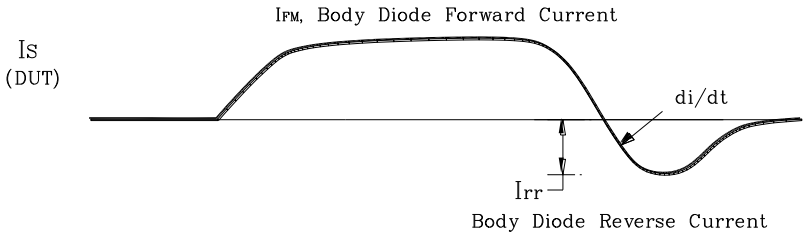
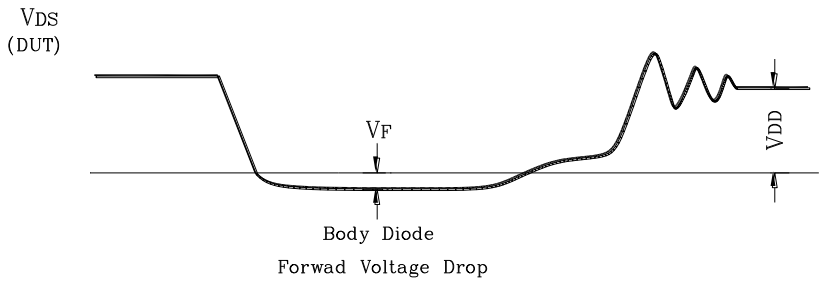


Fig. 15 Diode Reverse Recovery Time Test Circuit & Waveform

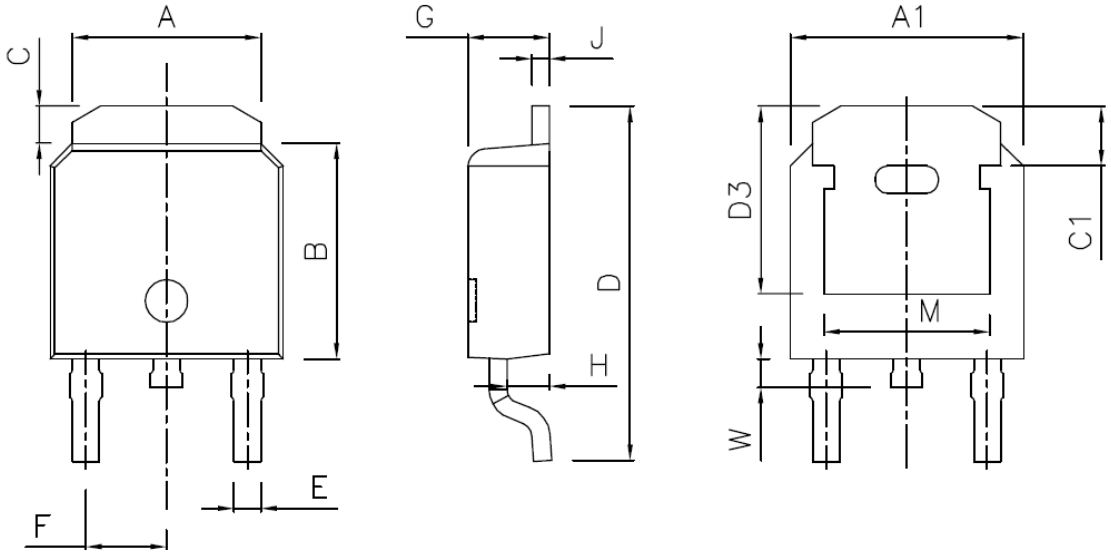


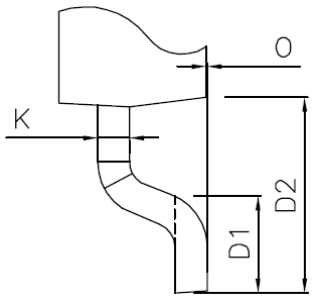






Package Outline Dimensions





SYMBOL	MILLIMETERS		
	MIN	NOR	MAX
A	5.03	5.34	5.64
A1	6.30	6.60	6.90
B	5.70	6.00	6.30
C	0.75	1.05	1.35
C1	1.021	1.321	1.621
D	9.65	9.95	10.25
D1	1.30	1.50	1.70
D2	2.70	2.90	3.10
D3	5.00	5.30	5.60
E	0.61	0.76	0.91
F	2.13	2.28	2.43
G	2.00	2.30	2.60
H	0.76	1.06	1.36
J	0.36	0.51	0.66
K	0.37	0.52	0.67
M	4.55	4.85	5.15
O	0.00	0.07	0.17
W	0.60	0.90	1.20

The AUK Corp. products are intended for the use as components in general electronic equipment (Office and communication equipment, measuring equipment, home appliance, etc.).

Please make sure that you consult with us before you use these AUK Corp. products in equipments which require high quality and / or reliability, and in equipments which could have major impact to the welfare of human life(atomic energy control, airplane, spaceship, transportation, combustion control, all types of safety device, etc.). AUK Corp. cannot accept liability to any damage which may occur in case these AUK Corp. products were used in the mentioned equipments without prior consultation with AUK Corp..

Specifications mentioned in this publication are subject to change without notice.