KODENSHI AUK

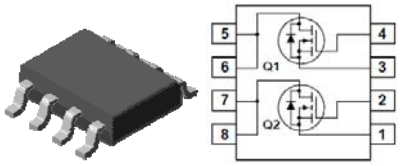
SUF1002

Dual N-ch Trench MOSFET

30V, 5.8A N-channel Trench MOSFET

Features

- Low drain-source On-resistance:
  $R_{DS(on)}$=24mΩ @V_{GS}=10V, I_D=2.9A
- Low gate charge: Q_g=79.5nC (Typ.)
- High power and current handing capability
- Lead free product is acquired

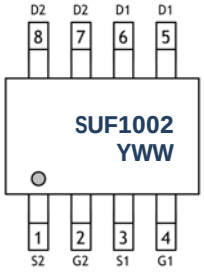


SOP-8

Ordering Information

Part Number	Marking Code	Package	Packaging
SUF1002	**SUF1002**	**SOP-8**	**Tape & Reel**

Marking and Pin Assignment



Column 1: Device Code
Column 2: Production Information
- YWW: Year & Week Code

Absolute Maximum Ratings (T_{amb}=25℃, Unless otherwise noted)

Characteristic	Symbol	Ratings	Unit
Drain-source voltage	V_{DSS}	30	V
Gate-source voltage	V_{GSS}	±20	V
Drain current (DC)	I_D	5.8	A
Drain current (Pulsed) *	I_{DP}	23.2	A
Total power dissipation [1]	P_D	3	W
Avalanche current (Single) [3]	I_{AS}	5.8	A
Single pulsed avalanche energy [3]	E_{AS}	72	mJ
Avalanche current (Repetitive) [2]	I_{AR}	5.8	A
Repetitive avalanche energy [2]	E_{AR}	3.4	mJ
Operating junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 ~ 150	°C

*** Limited by maximum junction temperature**

Thermal Characteristics (T_{amb}=25℃, Unless otherwise noted)

Characteristic	Symbol	Ratings	Unit
Thermal resistance, junction to ambient [1]	$R_{th(j-a)}$	62.5	°C/W

Electrical Characteristics (T_{amb}=25℃, Unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	I_D=250uA, V_{GS}=0	30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=250uA, V_{DS}=V_{GS}	1	-	3	V
Drain-source cut-off current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
Gate leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2.9A	-	24	30	mΩ
		V_{GS}=5V, I_D=2.9A	-	28	34	
Forward transfer conductance [5]	g_{fs}	V_{DS}=5V, I_D=5.8A	-	12	-	S
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=10V, f=1MHz	-	370	560	pF
Output capacitance	Coss		-	60	90	
Reverse transfer capacitance	Crss		-	36	54	
Turn-on delay time [4, 5]	$t_{d(on)}$	V_{DS}=15V, I_D=5.8A, R_G=10Ω	-	1.2	-	ns
Rise time [4, 5]	t_r		-	1.1	-	
Turn-off delay time [4, 5]	$t_{d(off)}$		-	2.5	-	
Fall time [4, 5]	t_f		-	1.1	-	
Total gate charge [4, 5]	Q_g	V_{DS}=15V, V_{GS}=5V I_D=18A	-	4.2	6.3	nC
Gate-source charge [4, 5]	Q_{gs}		-	0.9	1.4	
Gate-drain charge [4, 5]	Q_{gd}		-	1.4	2.1	

Source-Drain Diode Rating and Characteristics (T_{amb}=25℃, Unless otherwise specified)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Maximum diode forward current	Is	Integral reverse diode in the MOSFET	-	-	1.5	A
Source current (Pulsed) [2]	I_{SM}		-	-	6	A
Forward voltage [5]	V_{SD}	V_{GS}=0V, I_S=1A	-	-	1	V
Reverse recovery time	t_{rr}	I_S=1.5A, di_s/d_t=100A/us	-	90	-	Ns
Reverse recovery charge	Q_{rr}		-	0.5	-	uC

*** Note:**

1) Device mounted on a glass-epoxy board
2) Repetitive rating: Pulse width limited by maximum junction temperature.
3) L=3.4mH, I_{AS}=5.8A, V_{DD}=15V, R_G=25Ω
4) Pulse Test: Pulse width ≤ 300us, Duty cycle ≤ 2%.
5) Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 I_D - V_{DS}

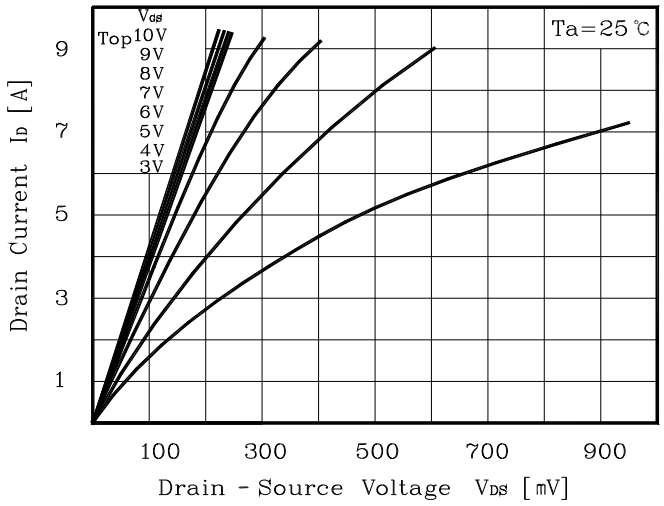


Fig. 2 I_D - V_{GS}

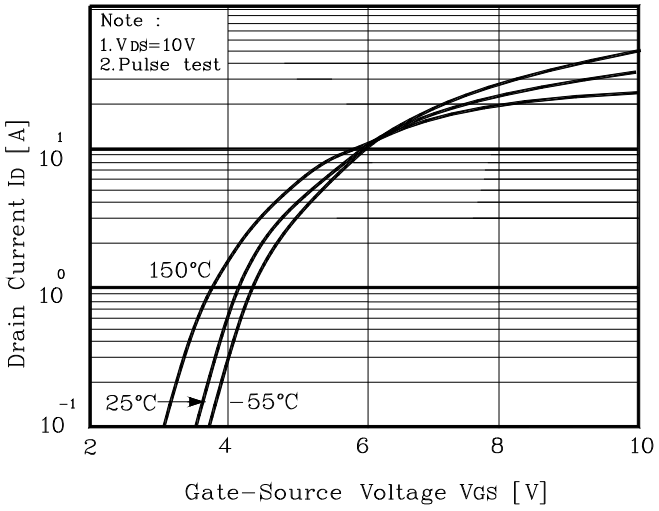


Fig. 3 $R_{DS(on)}$ - I_D

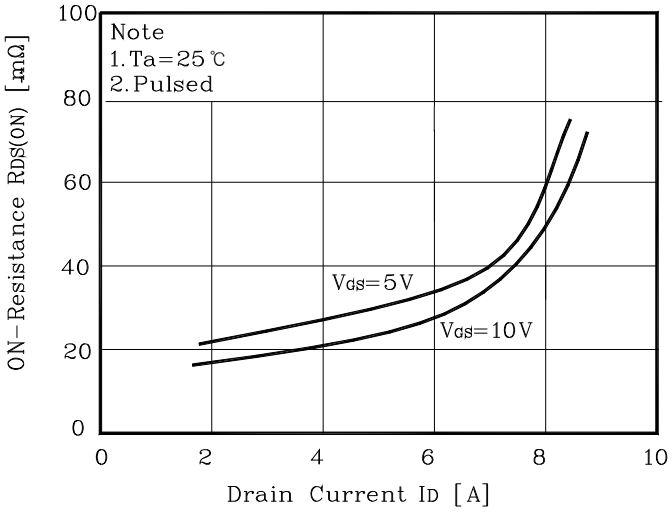


Fig. 4 I_S - V_{SD}

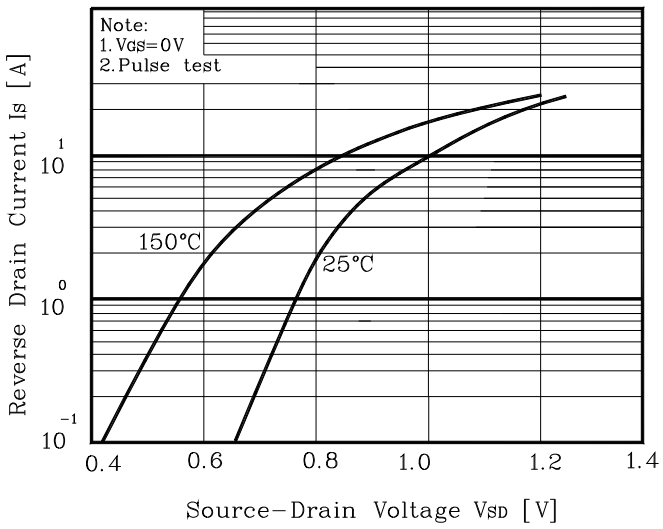


Fig. 5 Capacitance - V_{DS}

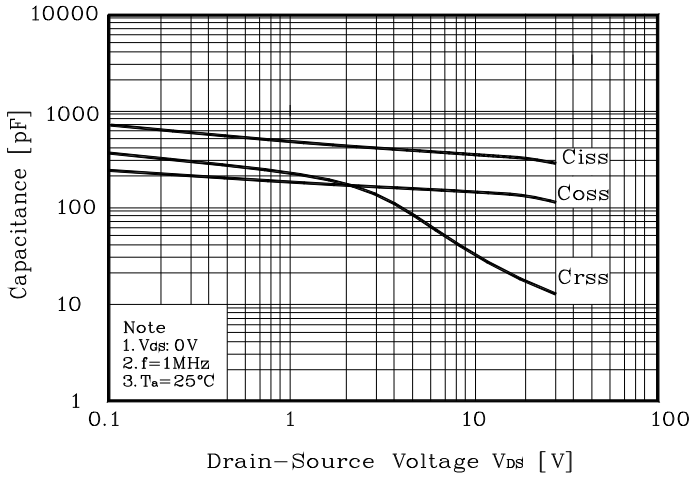


Fig. 6 V_{GS} - Q_G

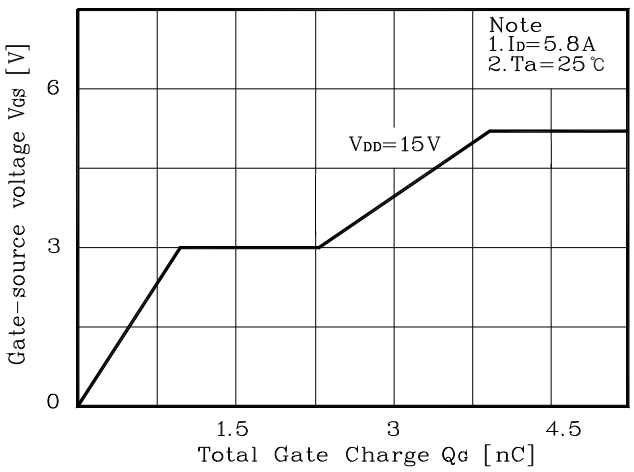


Fig. 7 V_{DSS} - T_J

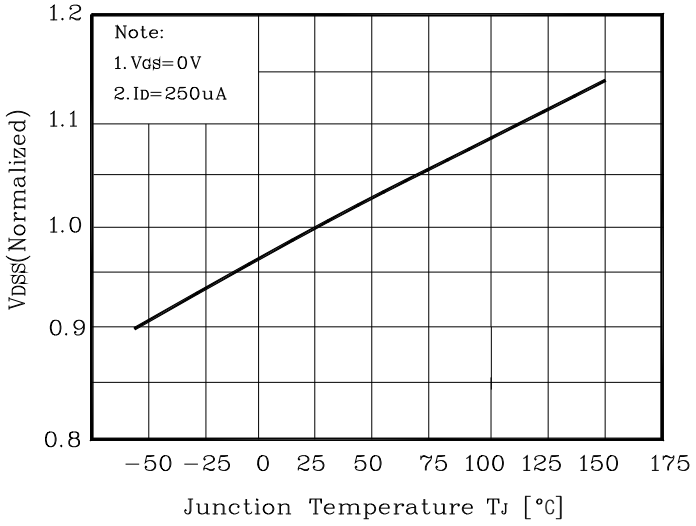


Fig. 8 $R_{DS(on)}$ - T_J

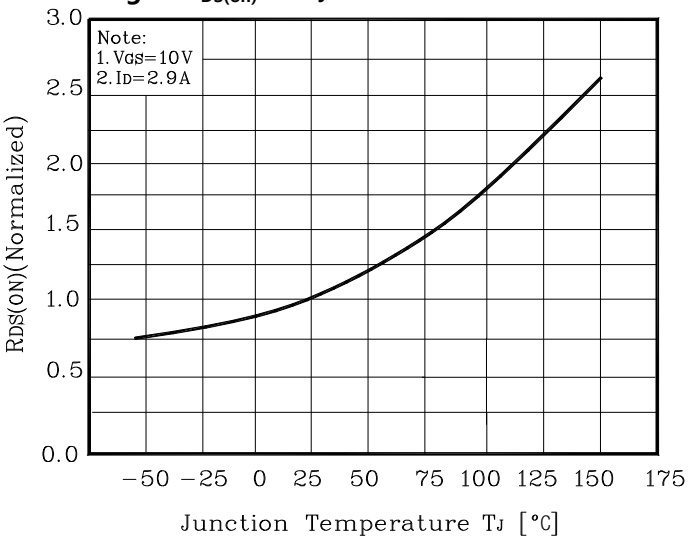


Fig. 9 I_D - T_a

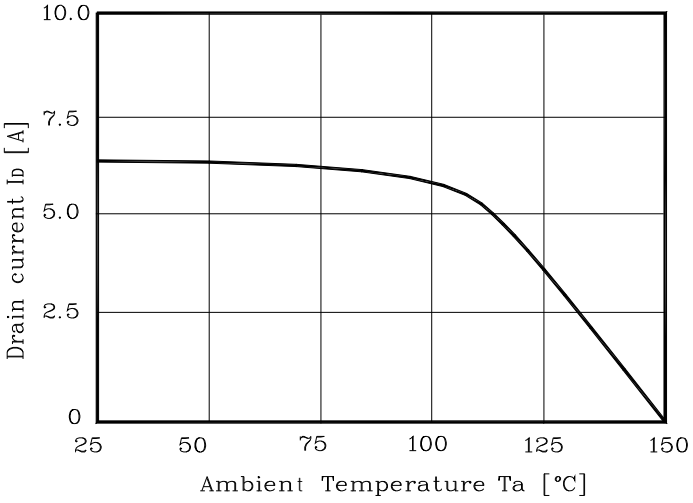


Fig. 10 Safe Operating Area

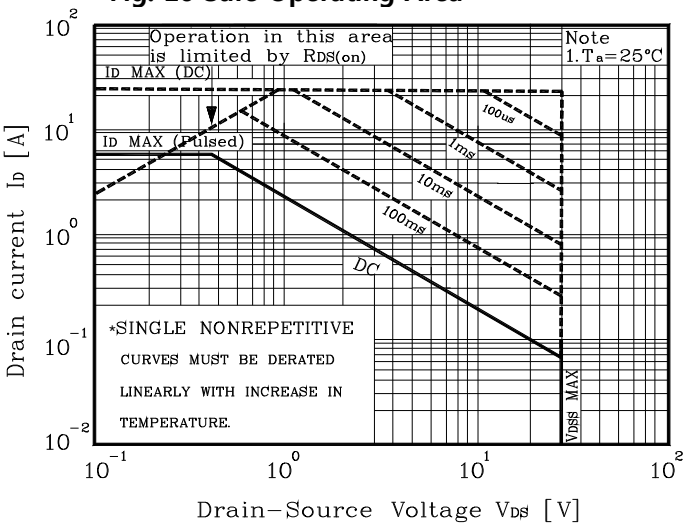


Fig. 11 Gate Charge Test Circuit & Waveform

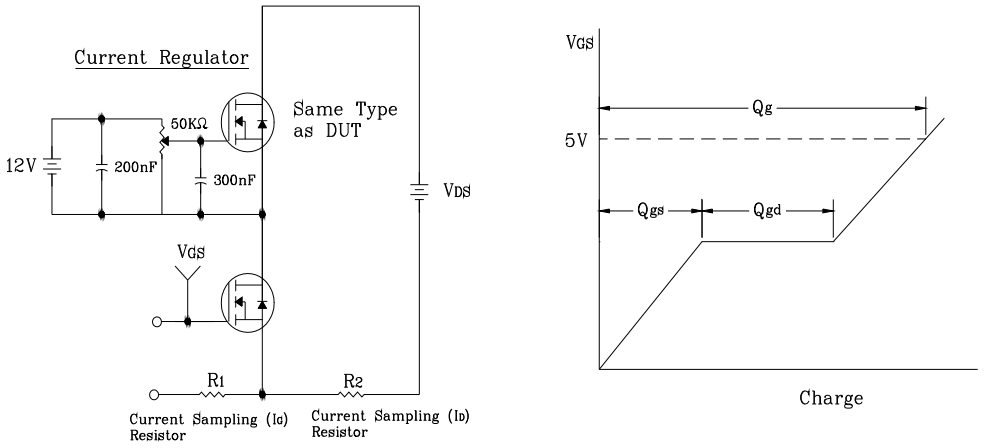


Fig. 12 Resistive Switching Test Circuit & Waveform

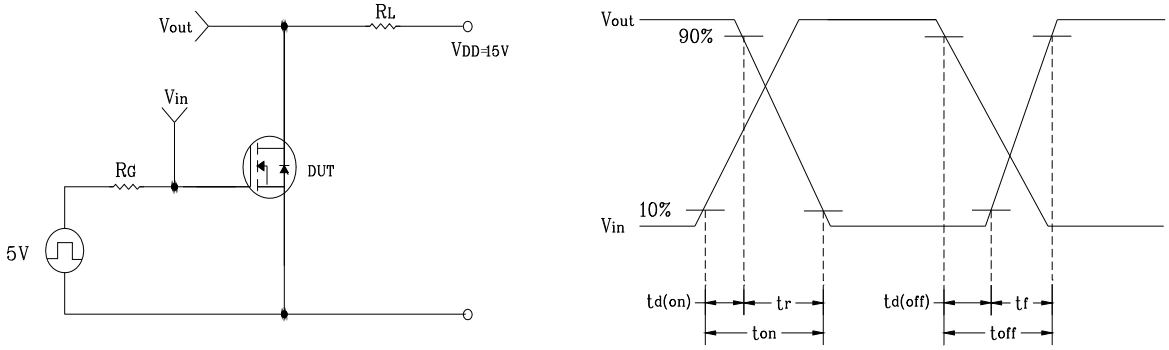


Fig. 13 E_{AS} Test Circuit & Waveform

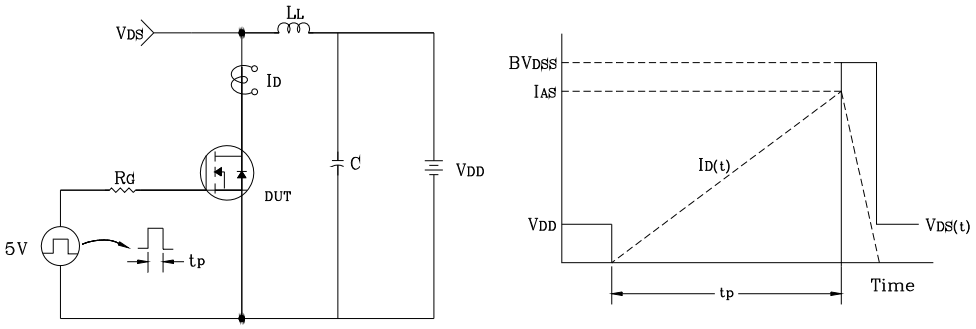
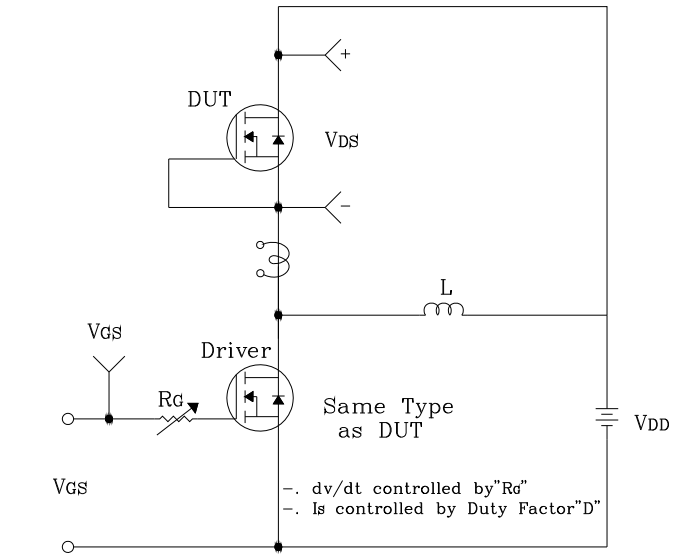
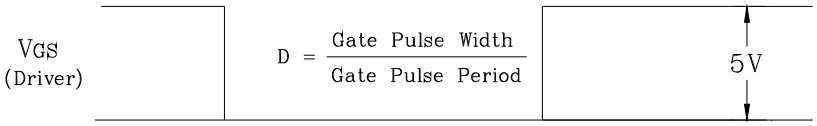
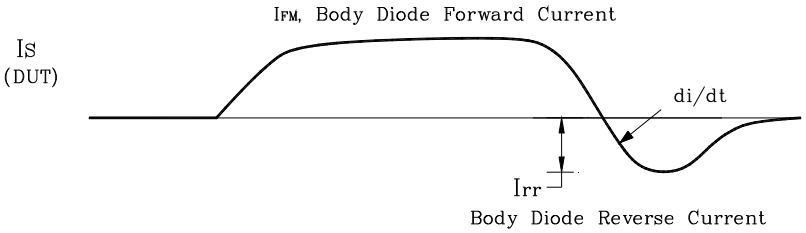
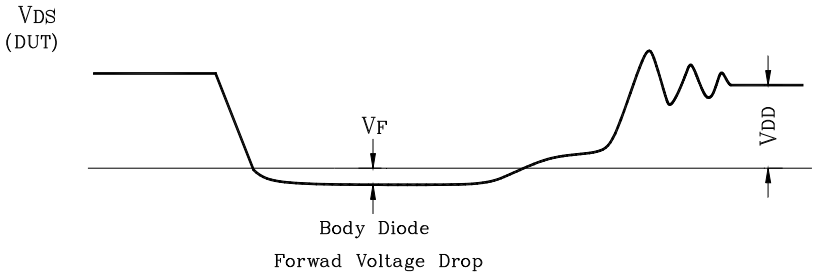


Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform

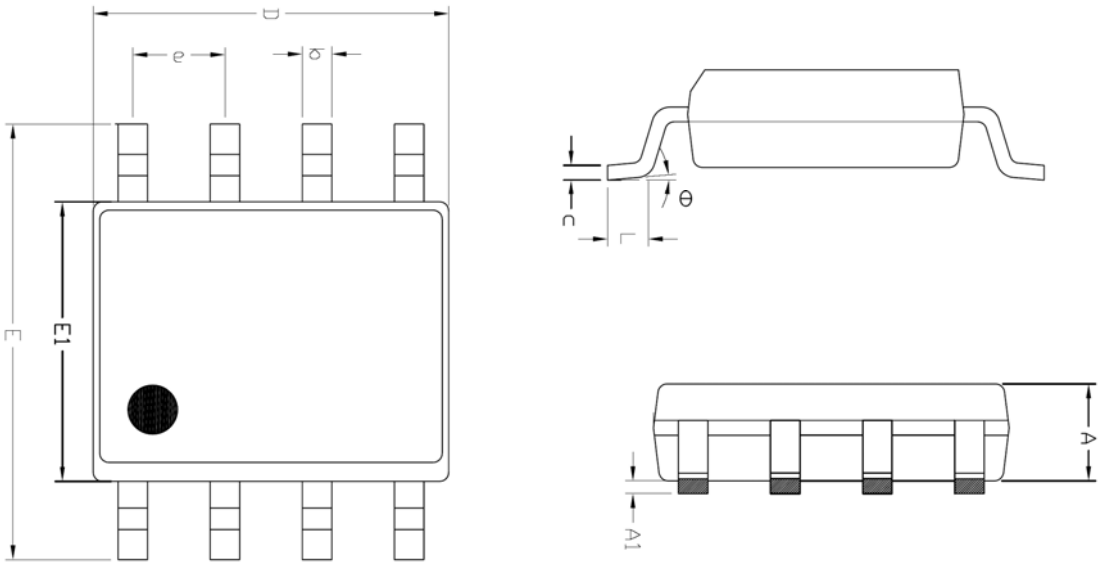






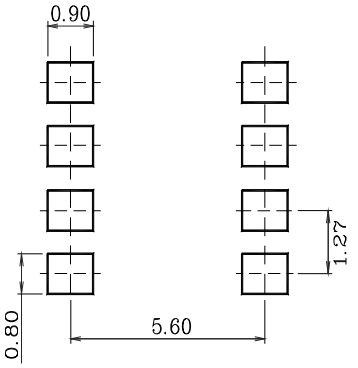


Package Outline Dimensions



SYMBOL	MILLIMETER(mm)			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	1.245	—	1.445	
A1	0.125	0.175	0.275	
b	0.320	0.420	0.520	
c	0.170	0.220	0.270	
D	4.802	4.902	5.002	
E	5.870	6.020	6.170	
E1	3.761	3.861	3.961	
e	1.270 BSC			
L	0.462	0.562	0.662	
θ	0 °	—	8 °	

※ Recommended Land Pattern [unit: mm]



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