Descriptions

This 11.5A,100V N-Channel MOSFET in a SOP-8 Plastic Package.

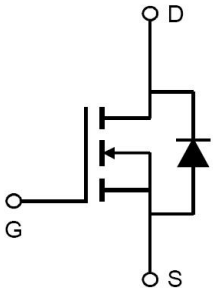
Features

- Low $R_{DS(ON)}$
- Low gate charge
- Optimized for fast-switching
- RoHS and halogen-free compliant

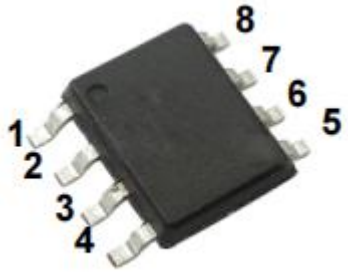
Applications

Synchronus Rectification in DC/DC and AC/DC Converters, Isolated DC/DC Converters in Telecom and Industrial.

Equivalent Circuit



Pinning



PIN1、PIN 2、PIN 3: Source　　PIN 4：Gate

PIN5、PIN 6、PIN 7、PIN 8: Drain

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	11.5	A
	T_A=70℃		9.0	A
Pulsed Drain Current [C]		I_{DM}	46	A
Avalanche Current [C]		I_{AS}	20	A
Avalanche energy L=0.1mH [C]		E_{AS}	20	mJ
VDS Spike	10μS	V_{SPIKE}	120	V
Power Dissipation [B]	T_A=25℃	P_D	3.1	W
	T_A=70℃		2.0	W
Maximum Junction-to-Ambient [A] t≤10S		$R_{\theta JA}$	40	℃/ W
Maximum Junction-to-Ambient [AD] Steady-State			75	℃/ W
Maximum Junction-to Lead Steady-State		$R_{\theta JL}$	24	℃/ W
Operating and Junction Temperature Range		T_j T_{stg}	-55～+150	℃

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V V_{GS}=0V			1.0	μA
		V_{DS}=100V V_{GS}=0V T_J=55℃			5.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=11.5A		10	12	mΩ
		V_{GS}=10V I_D=11.5A T_J=125℃			21	
		V_{GS}=4.5V I_D=9.5A		13	15.5	
Forward Transconductance	g_{FS}	V_{DS}=5.0V I_D=11.5A		45		S
Diode Forward Voltage	V_{SD}	I_S=12A V_{GS}=0V		0.71	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				4.0	A

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=50V V_{GS}=0V f=1.0MHz		2420		pF
Output Capacitance	C_{oss}			170		
Reverse Transfer Capacitance	C_{rss}			11		
Gate resistance	R_g	f=1.0MHz	0.20	0.55	0.90	Ω
Total Gate Charge(10V)	Q_g	V_{DD}=10V I_D=11.5A V_{DS}=50V		33	50	nC
Total Gate Charge(4.5V)				15	25	
Gate-Source Charge	Q_{gs}			7.0		
Gate-Drain Charge	Q_{gd}			4.0		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V V_{DS}=50V R_L=4.35Ω R_{GEN}=3.0Ω		8.0		ns
Turn-On Rise Time	t_r			3.0		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	t_f			4.0		
Body Diode Reverse Recovery Time	t_{rr}	I_F=11.5A dI/dt=500A/μs		25		ns
Body Diode Reverse Recovery Charge	Q_{rr}			110		nC

Notes:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using ≤ 10s junction-to-ambient thermal resistance.

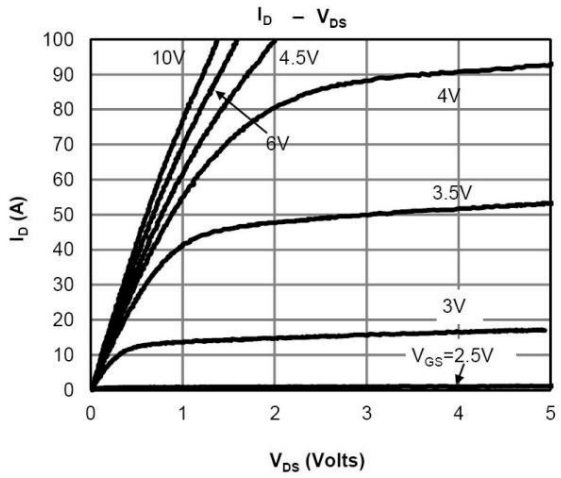
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

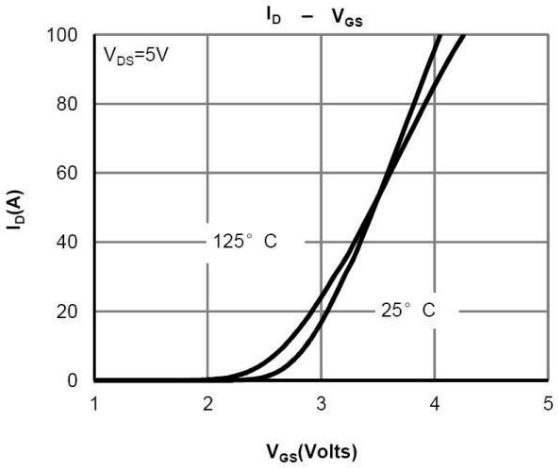
D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

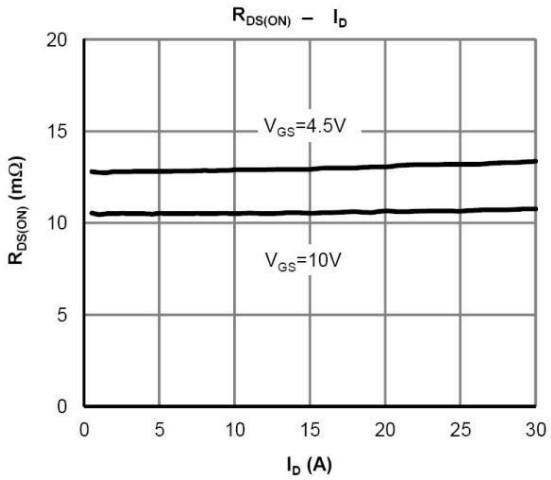
E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

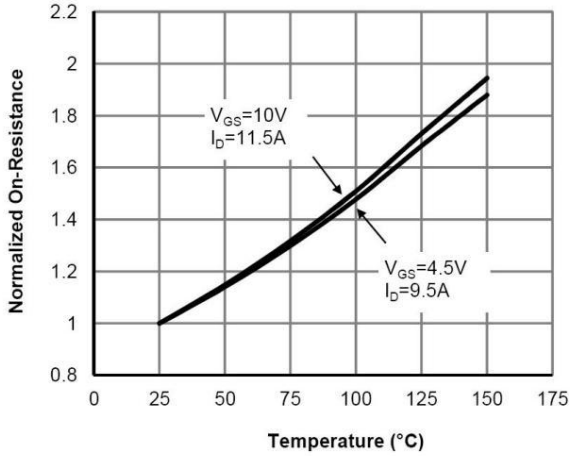
F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

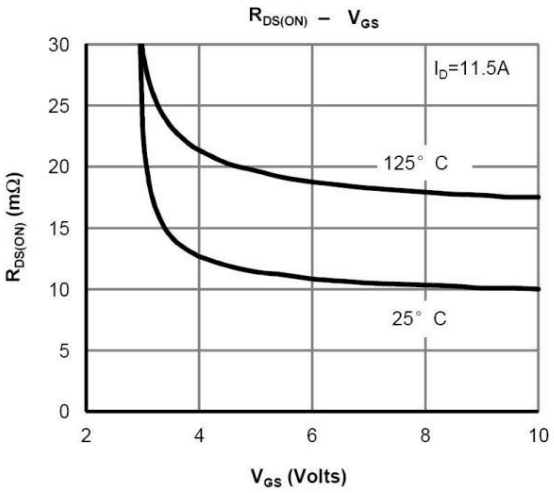
Electrical Characteristic Curve

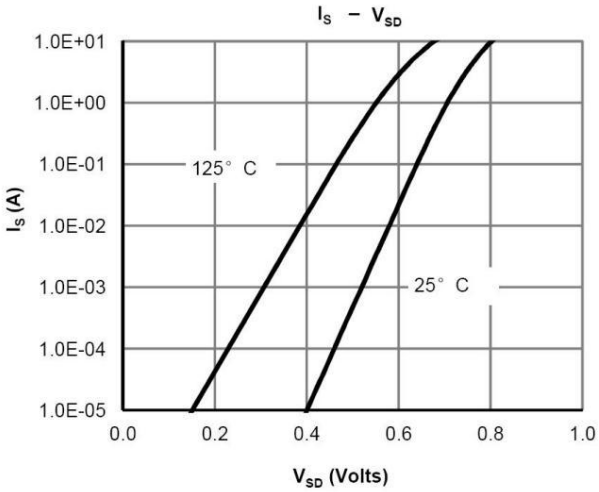




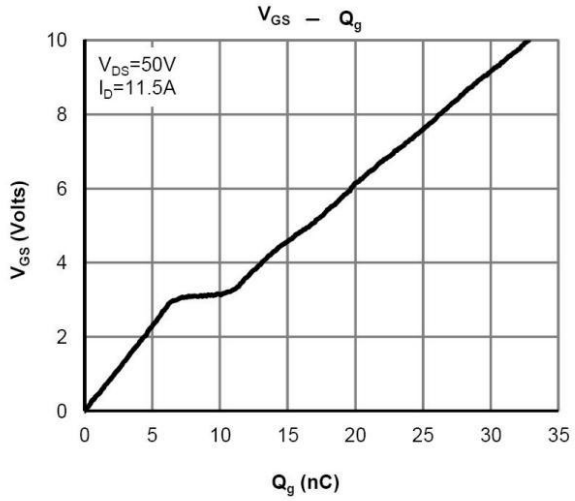


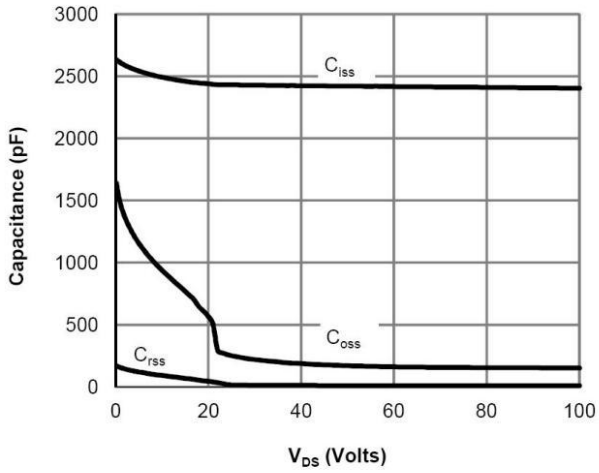


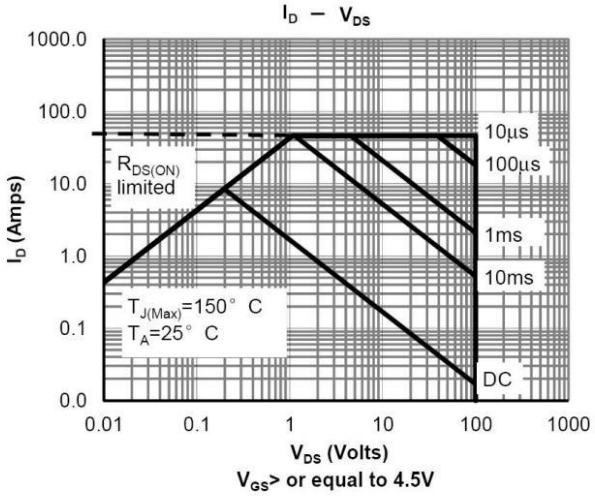


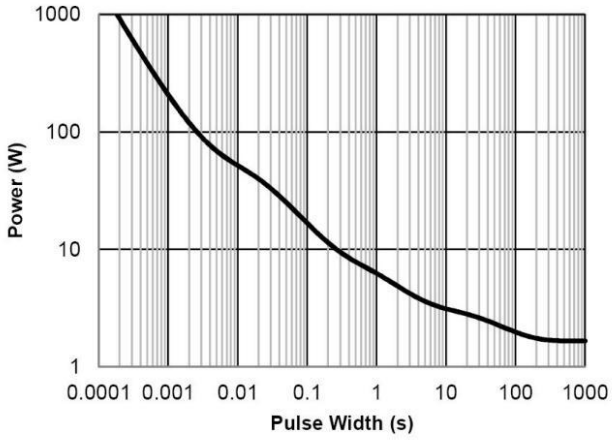


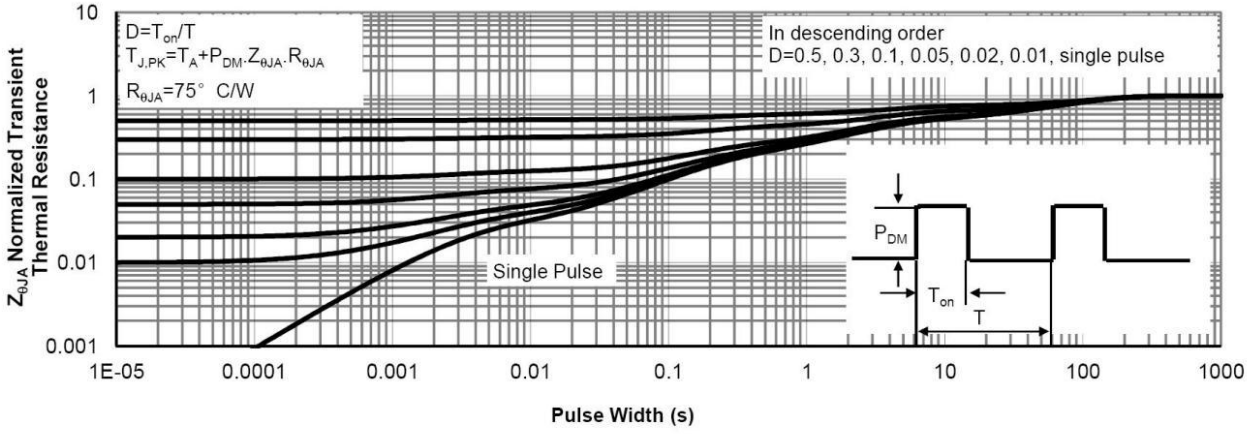
Electrical Characteristic Curve





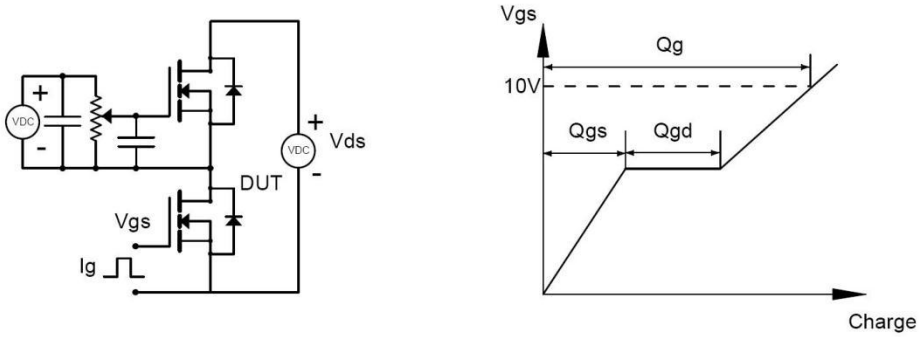




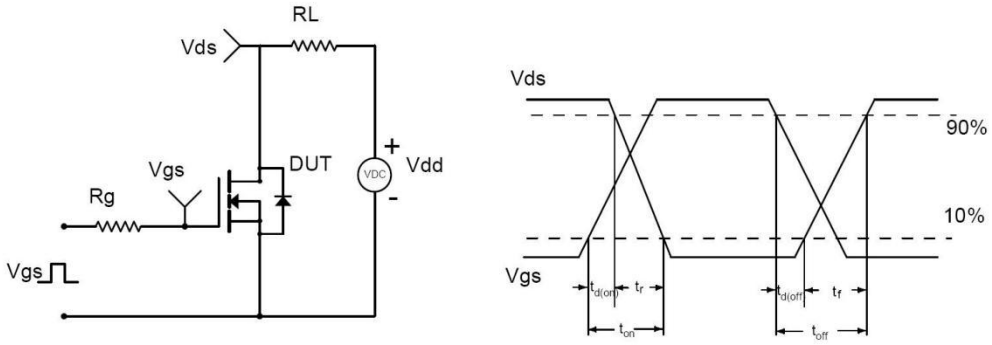


Test Circuit & Waveform

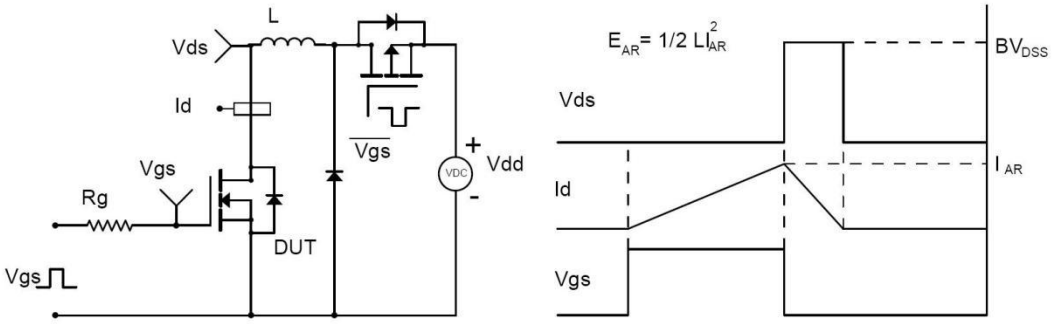
Gate Charge Test Circuit & Waveform



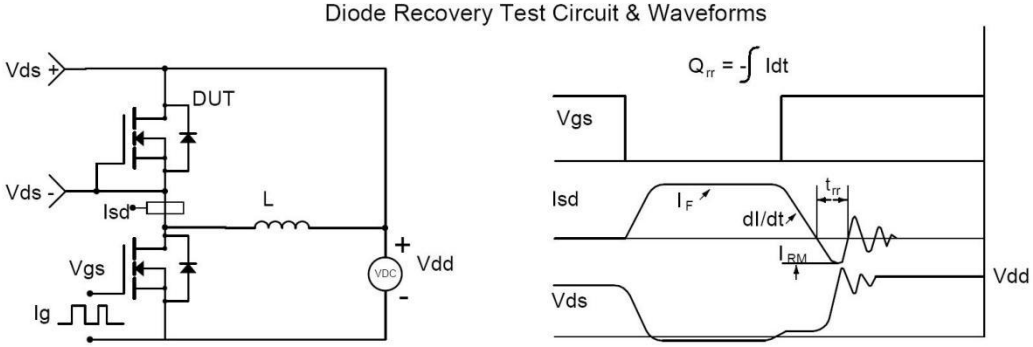
Resistive Switching Test Circuit & Waveforms



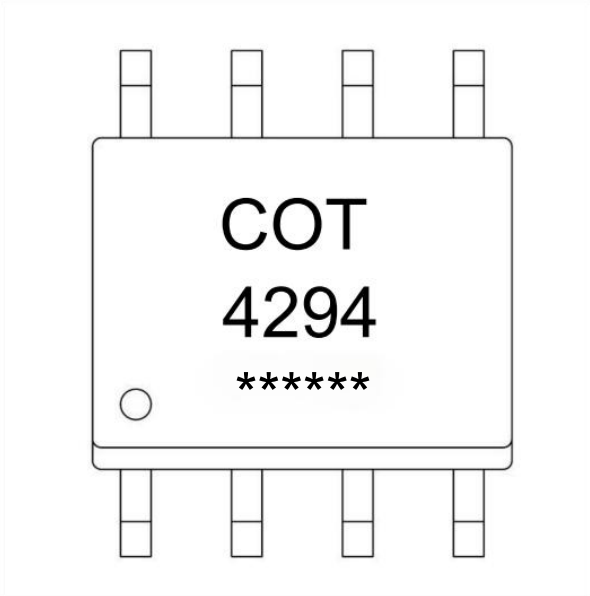
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Marking Instructions



Note:

COT: Company Code.

4294: Product Type.

******: Lot No. Code, code change with Lot No.

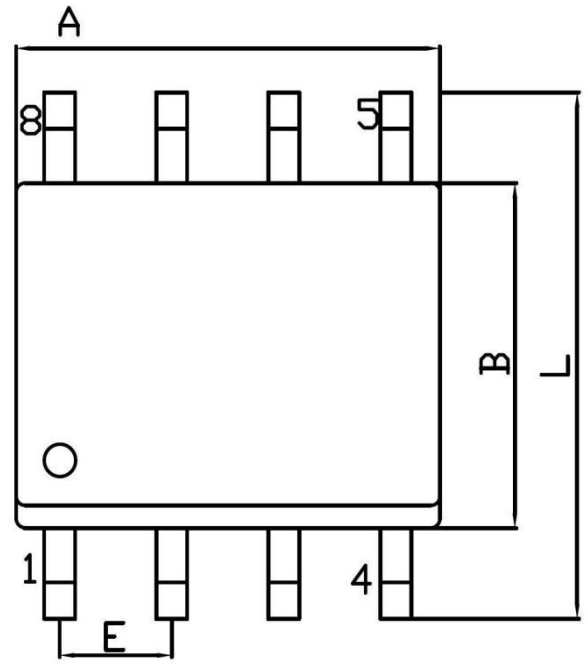
Packaging SPEC

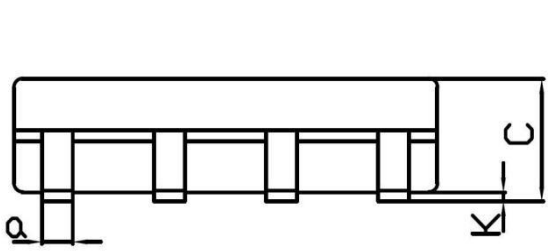
REEL INFORMATION

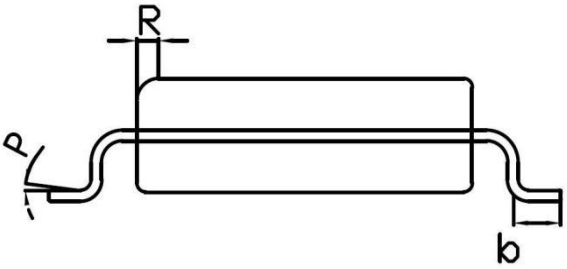
Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOP/ESOP-8	4,000	2	8,000	6	48,000	13″ ×12	360×360×50	380×335×366

Package Outline Dimensions

SOP-8 Unit:mm







Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25