

/ Descriptions

SOP-8 N MOS

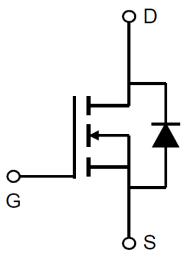
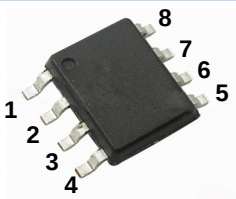
N-Channel Enhancement Mode Field Effect Transistor in a SOP-8 Plastic Package.

/ Features $V_{DS}=30V$ $I_D=13A$ ($V_{GS} = 10V$) $R_{DS(ON)} < 11.5m\Omega$ ($V_{GS}=10V$) $R_{DS(ON)} < 15.5m\Omega$ ($V_{GS}=4.5V$)

Halogen-free Product.

/ Applications

This device is suitable for high side switch in SMPS and general purpose applications.

/ Equivalent Circuit**/ Pinning**

PIN1	S	PIN 2	S	PIN 3	S	PIN4	G
PIN 5	D	PIN 6	D	PIN 7	D	PIN 8	D

/ h_{FE} Classifications & Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ^A	$I_D (T_A=25^\circ\text{C})$	13	A
	$I_D (T_A=70^\circ\text{C})$	10.4	A
Pulsed Drain Current ^B	I_{DM}	100	A
Avalanche Current ^C	I_{AS}	22	
Avalanche energy $L=0.1\text{mH}$ ^C	E_{AS}	24	
Power Dissipation ^B	$P_D (T_A=25^\circ\text{C})$	3.1	W
	$P_D (T_A=70^\circ\text{C})$	2	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	$t \leq 10\text{s}$		31	40	/W
Maximum Junction-to-Ambient ^{A D}		Steady-State		59	75	
Maximum Junction-to-Lead	$R_{\theta JL}$	Steady-State		16	24	/W

Note:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=30V$ $V_{GS}=0V$ $T_J=55$			5.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.5	1.9	2.5	V
On state drain current	$I_{D(on)}$	$V_{DS}=5V$ $V_{GS}=10V$	100			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=12A$		9.5	11.5	m Ω
		$V_{GS}=10V$ $I_D=12A$ $T_J=125$		14	17	m Ω
		$V_{GS}=4.5V$ $I_D=10A$		12.5	15.5	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5.0V$ $I_D=12A$		45		S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$		0.75	1	V
Maximum Body-Diode Continuous Current	I_S				4	A
Input Capacitance	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$		760		pF
Output Capacitance	C_{oss}			125		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$	0.8	1.6	2.4	Ω
Total Gate Charge(10V)	Q_g	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=12A$		14	25	nC
Total Gate Charge(4.5V)				6.6	12	nC
Gate-Source Charge	Q_{gs}			2.4		nC
Gate-Drain Charge	Q_{gd}			3		nC
Gate-Source Charge	Q_{gs}	$V_{GS}=4.5V$ $V_{DS}=15V$ $I_D=12A$		2.4		nC
Gate-Drain Charge	Q_{gd}			3		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=1.25\Omega$ $R_{GEN}=3\Omega$		4.4		ns
Turn-On Rise Time	t_r			9		ns
Turn-Off Delay Time	$t_{d(off)}$			17		ns
Turn-Off Fall Time	t_f			6		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F=12A$ $dI/dt=100A/\mu s$		7		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=12A$ $dI/dt=100A/\mu s$		8		nC

/ Electrical Characteristic Curve



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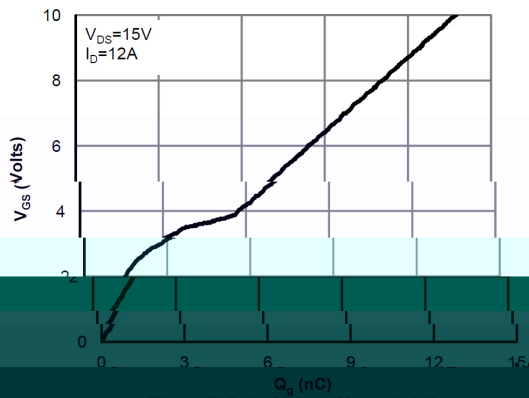


Figure 7: Gate-Charge Characteristics

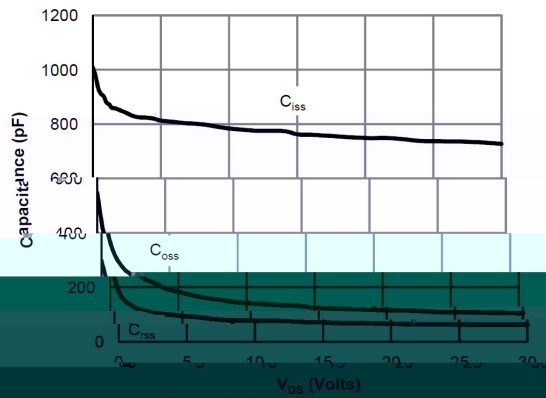
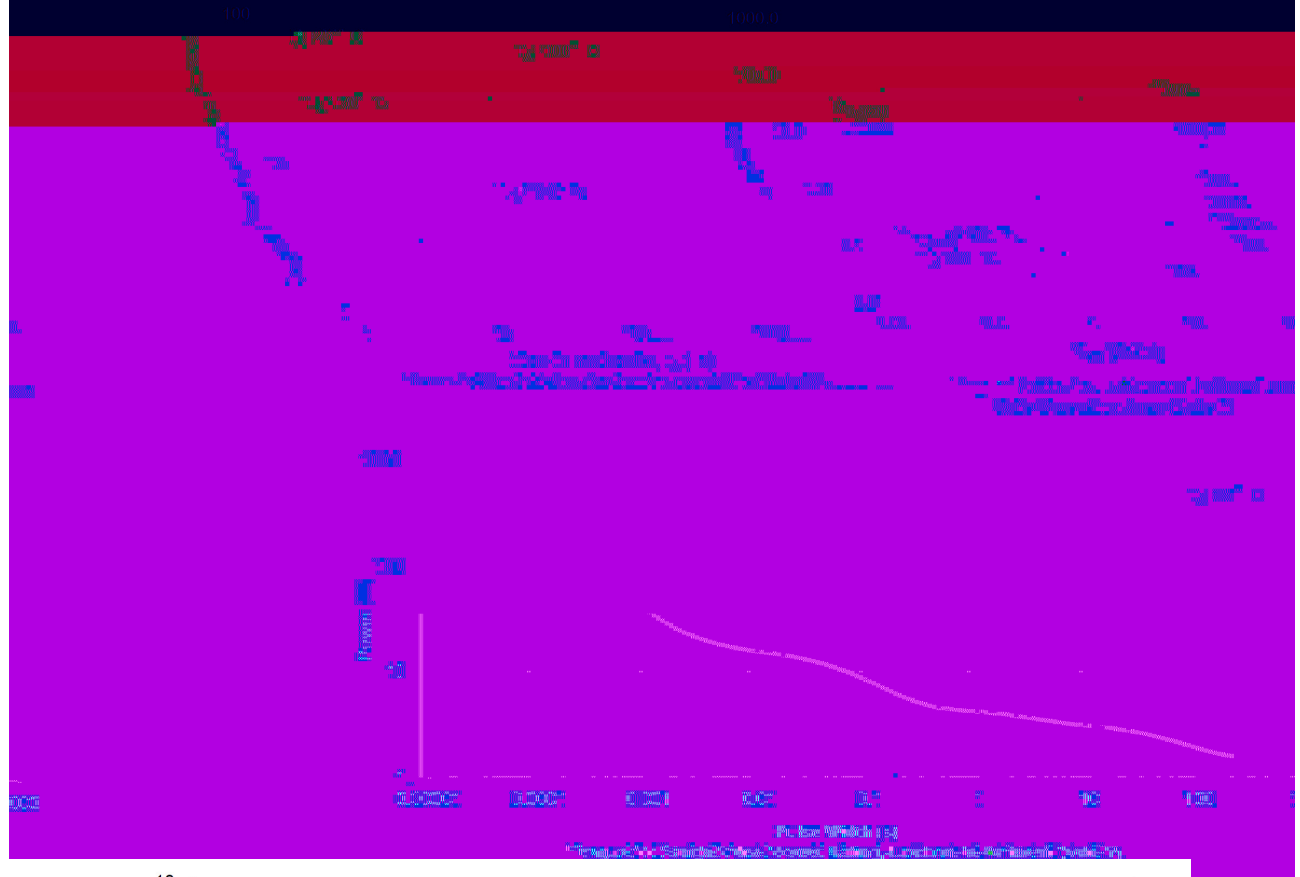
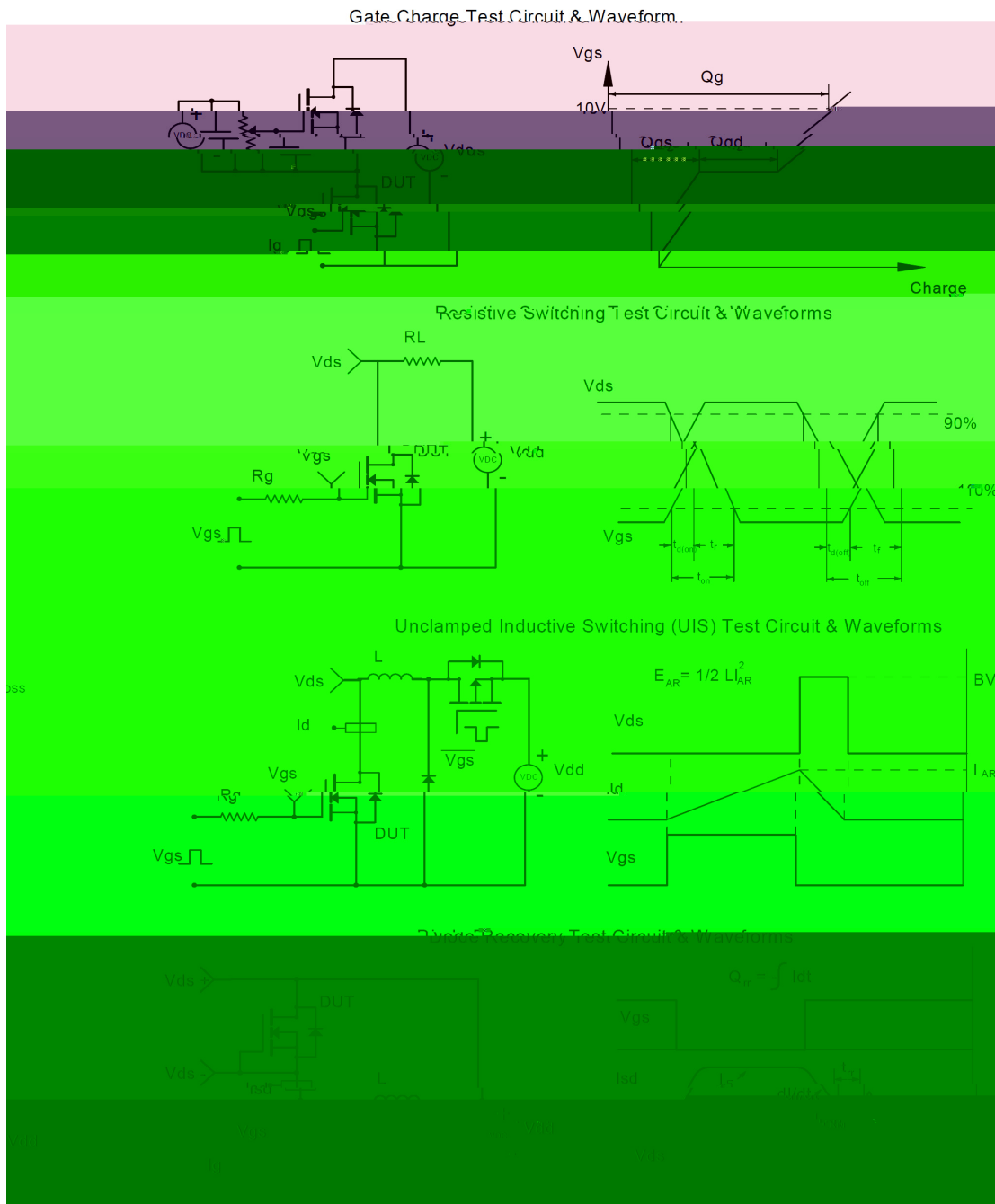


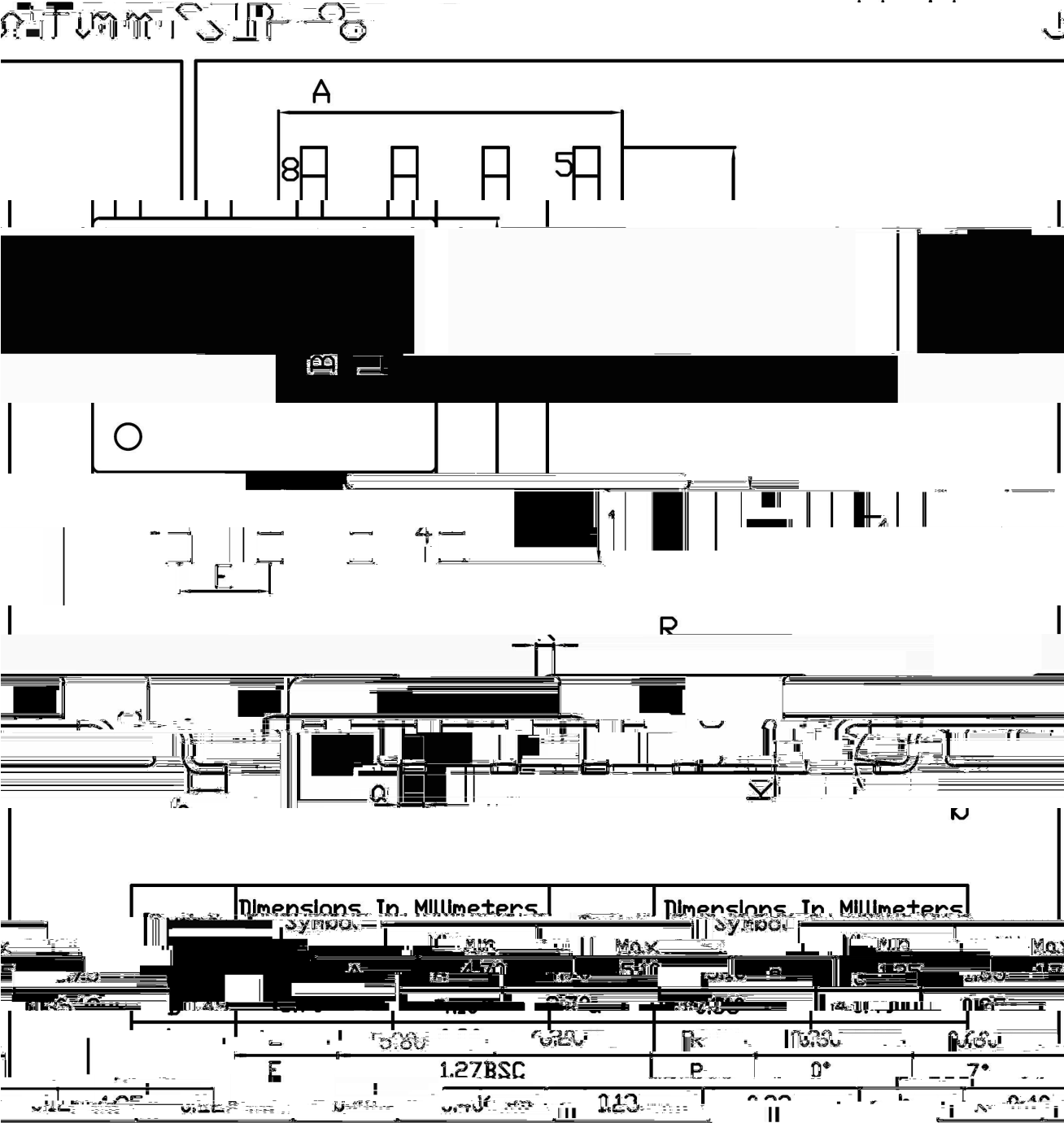
Figure 8: Capacitance Characteristics



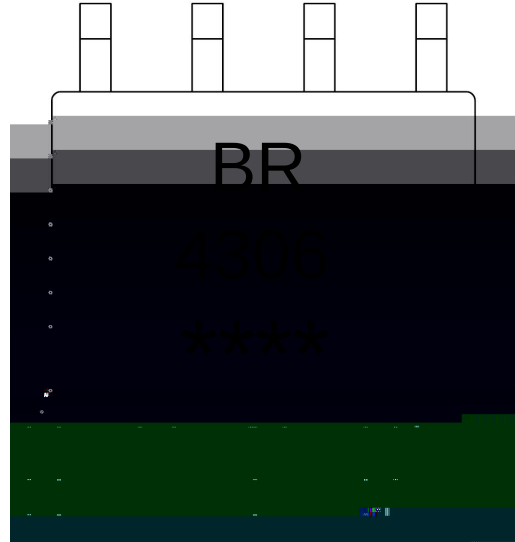
/ Test Circuit & Waveform



/ Package Dimensions



/ Marking Instructions



BR

4306

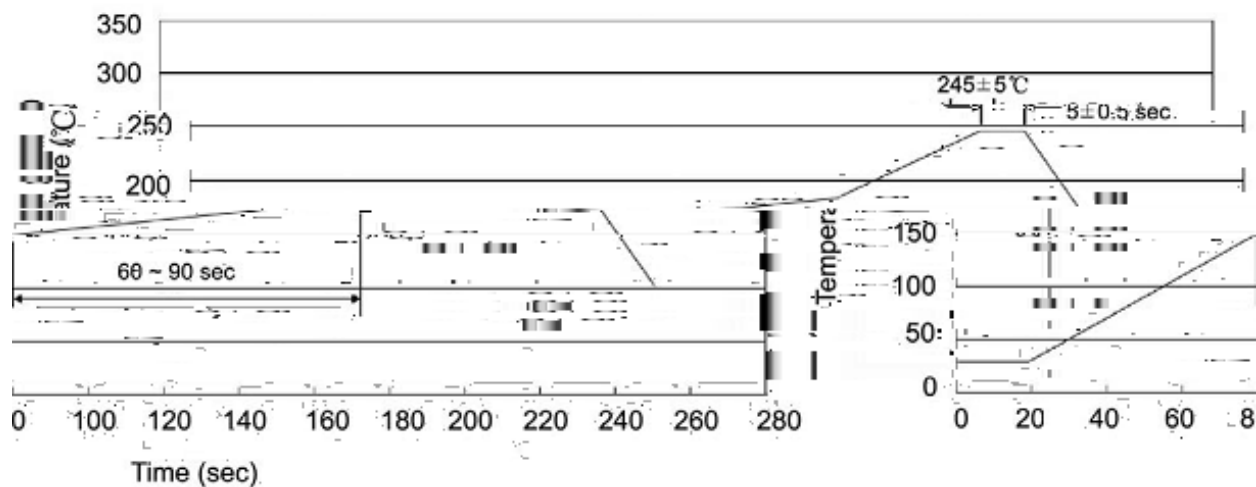
Note:

BR: Company Code.

4306: Product Type.

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

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|-----------|--------|---|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245±5 | | 5±0.5sec; | | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	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

/ Notices