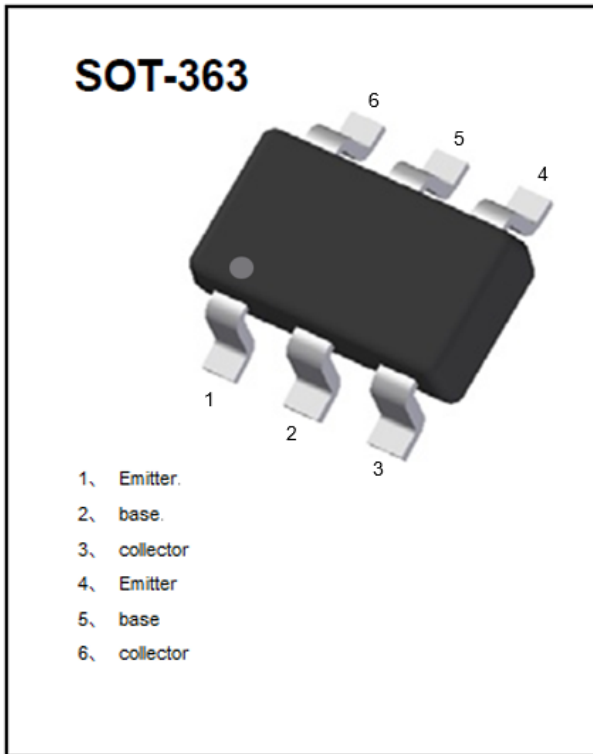


Dual NPN+PNP Small Signal Transistor



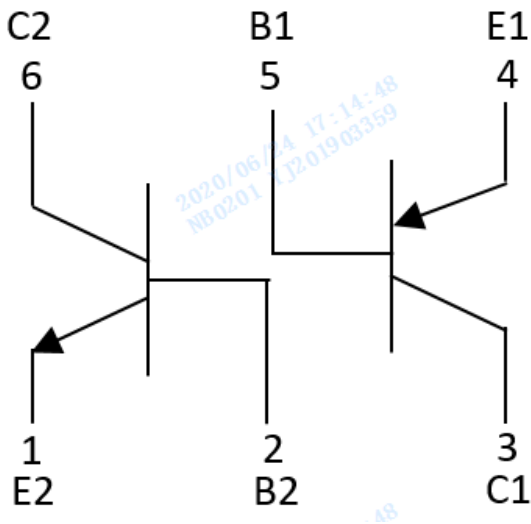
Features

- Epoxy meets UL-94 V-0 flammability rating
- Surface mount package ideally Suited for Automatic Insertion
- NPN/PNP

Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** K46

■Equivalent circuit



■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MMDT3946	F2	Approximate 0.009g	3000	30000	120000	7" reel



MMDT3946

■TR1 NPN Pin1、 2、 6 Maximum Ratings (Ta=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	V_{CBO}	V	$I_C=10\mu A, I_E=0$	60
Collector-Emitter Voltage	V_{CEO}	V	$I_C=1mA, I_B=0$	40
Emitter-Base Voltage	V_{EBO}	V	$I_E=10\mu A, I_C=0$	6
Collector Current -Continuous	I_C	mA		200
Total Device Dissipation	P_C	mW		200
Junction Temperature	T_j	°C		150
Storage Temperature	T_{STG}	°C		-55 to +150

■TR1 NPN Pin1、 2、 6 Electrical Characteristics (Ta=25°C unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V_{CBO}	V	$I_C=10\mu A, I_E=0$	60		
Collector-emitter breakdown voltage	V_{CEO}	V	$I_C=1mA, I_B=0$	40		
Emitter-base breakdown voltage	V_{EBO}	V	$I_E=10\mu A, I_C=0$	6		
Collector cut-off current	I_{CBO}	nA	$V_{CB}=30V, I_E=0$			50
Collector cut-off current	I_{CEO}	nA	$V_{CE}=30V, I_B=0$			50
Collector cut-off current	I_{EBO}	nA	$V_{EB}=5V, I_C=0$			50
DC current gain	h_{FE1}		$V_{CE}=1V, I_C=0.1mA$	40		
	h_{FE2}		$V_{CE}=1V, I_C=1mA$	70		
	h_{FE3}		$V_{CE}=1V, I_C=10mA$	100		300
	h_{FE4}		$V_{CE}=1V, I_C=50mA$	60		
	h_{FE5}		$V_{CE}=1V, I_C=100mA$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=10mA, I_B=1mA$			0.2
		V	$I_C=50mA, I_B=5mA$			0.3
Base-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=10mA, I_B=1mA$	0.65		0.85
		V	$I_C=50mA, I_B=5mA$			0.95
Transition frequency	f_T	MHz	$V_{CE}=20V, I_C=20mA, f=100MHz$	300		
Delay Time	t_d	ns	$V_{CC}=3V, I_C=10mA, V_{BE}=0.5V, I_{B1}=1mA$			35
Rise Time	t_r	ns				35
Storage Time	t_s	ns	$V_{CC}=3V, I_C=10mA, I_{B1}=-I_{B2}=1mA$			200
Fall Time	t_f	ns				50
Output capacitance	C_{ob}	pF	$V_{CB}=5V, I_E=0A, f=1MHz$			4



MMDT3946

■TR2 PNP Pin3、4、5 Maximum Ratings (Ta=25°C Unless otherwise specified)

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	VCBO	V	IC=-10μA,IE=0	-40
Collector-Emitter Voltage	VCEO	V	IC=-1mA,IB=0	-40
Emitter-Base Voltage	VEBO	V	IE=-10μA,IC=0	-5
Collector Current	IC	mA		-200
Total Device Dissipation	PC	mW		200
Junction Temperature	Tj	°C		150
Storage Temperature	TSTG	°C		-55 to +150

■TR2 PNP Pin3、4、5 Electrical Characteristics (Ta=25°C unless otherwise specified)

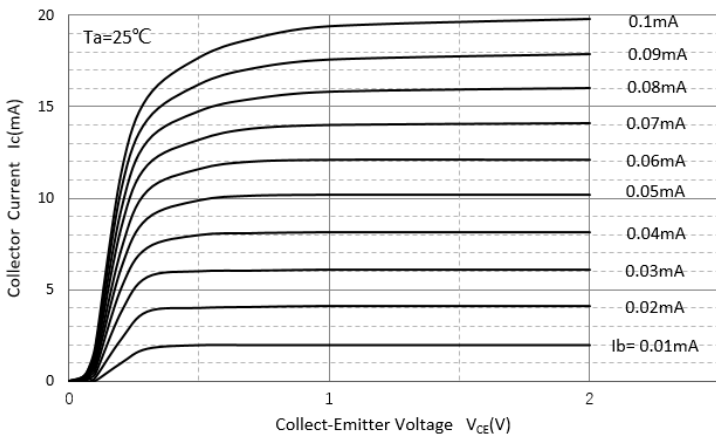
Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	V _{CBO}	V	IC=-10μA,IE=0	-40		
Collector-emitter breakdown voltage	V _{CEO}	V	IC=-1mA,IB=0	-40		
Emitter-base breakdown voltage	V _{EBO}	V	IE=-10μA,IC=0	-5		
Collector-Base cut-off current	I _{CBO}	nA	VCB=-30V,IE=0			-50
Emitter-Base cut-off current	I _{EBO}	nA	VEB=-5V,IC=0			-50
DC current gain	h _{FE1}		VCE=-1V,IC=-0.1mA	40		
	h _{FE2}		VCE=-1V,IC=-1mA	70		
	h _{FE3}		VCE=-1V,IC=-10mA	100		300
	h _{FE4}		VCE=-1V,IC=-50mA	60		
	h _{FE5}		VCE=-1V,IC=-100mA	30		
Collector-emitter saturation voltage	V _{CE(sat)}	V	IC=-10mA,IB=-1mA			-0.25
		V	IC=-50mA,IB=-5mA			-0.4
Base-emitter saturation voltage	V _{BE(sat)}	V	IC=-10mA,IB=-1mA	-0.65		-0.85
		V	IC=-50mA,IB=-5mA			-0.95
Transition frequency	f _T	MHz	VCE=-20V,IE=-10mA,f=100MHz	250		
Delay Time	td	ns	VCC=-3V, IC=-10mA, VBE=-0.5V, IB1=-1mA			35
Rise Time	tr	ns				35
Storage Time	ts	ns	VCC=-3V, IC=-10mA, IB1=-IB2=-1mA			225
Fall Time	tf	ns				75
Output capacitance	Cob	pF	VCB=-5V,IE=0A,f=1MHz			4.5



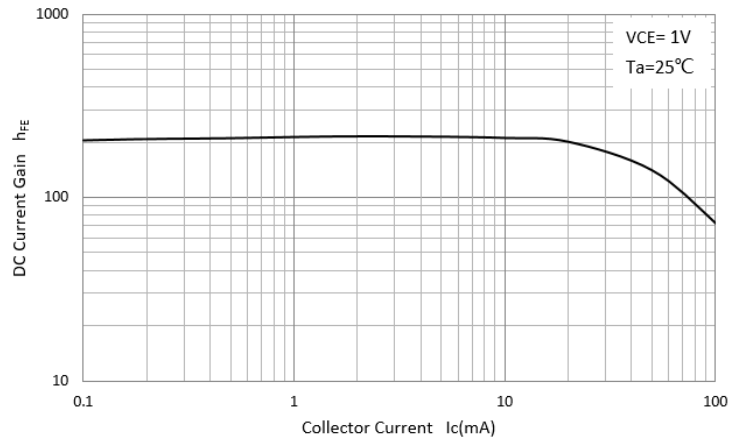
MMDT3946

■ TR1 NPN Pin1、2、6 Characteristics (Typical)

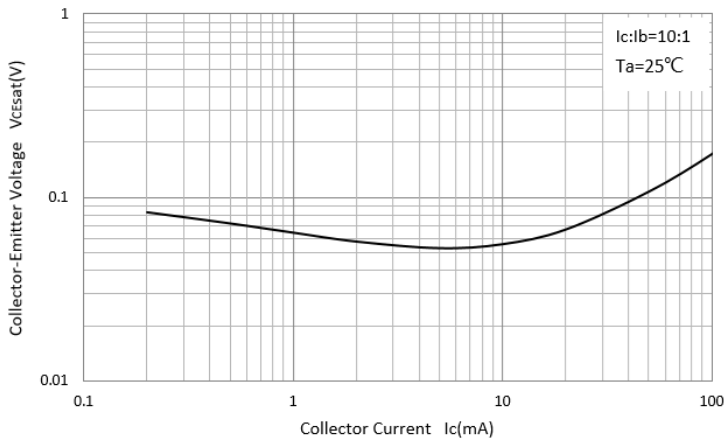
Static Characteristic



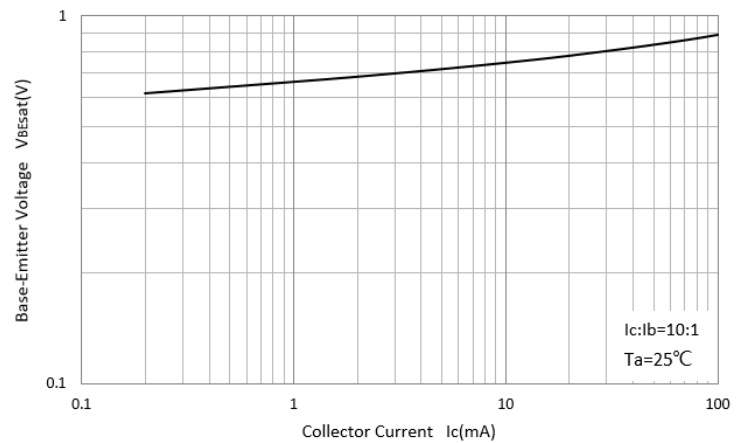
DC Current Gain



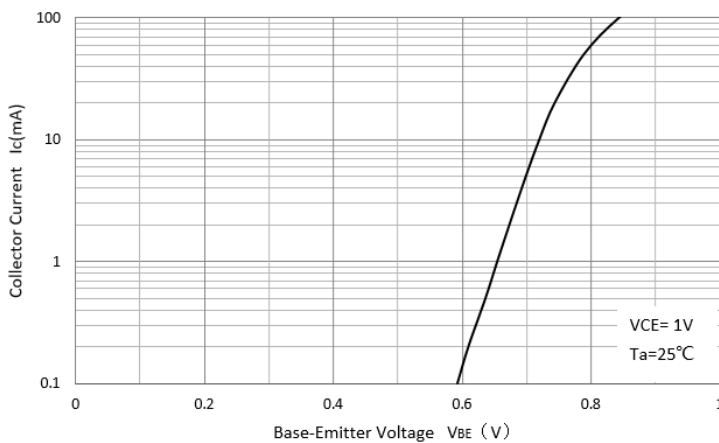
Collector-Emmitter Saturation Voltage



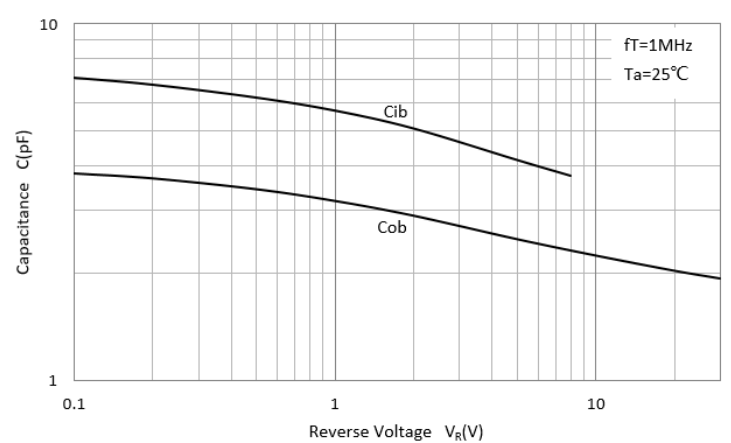
Base-Emmitter Saturation Voltage



Base-Emmitter On Voltage



$C_{ob}/C_{ib}-V_{CB}/V_{EB}$

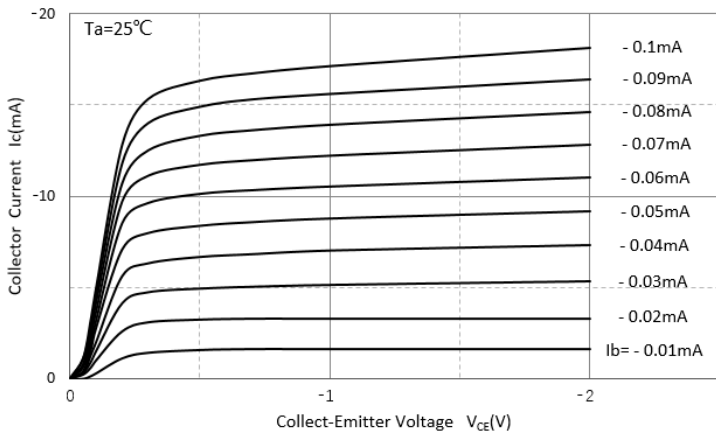




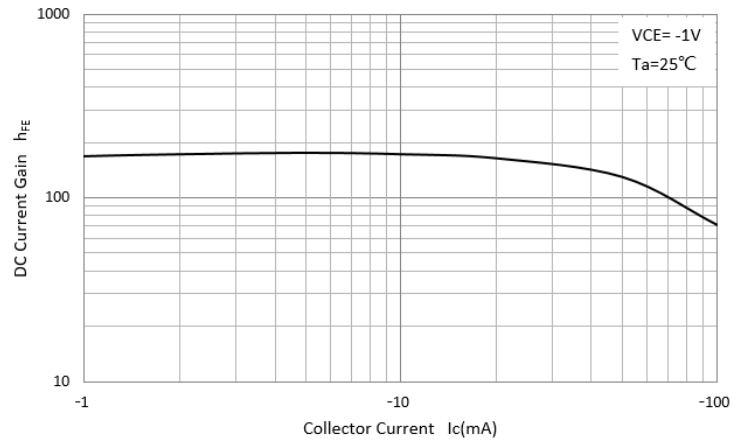
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■ TR2 PNP Pin3、4、5 Characteristics (Typical)

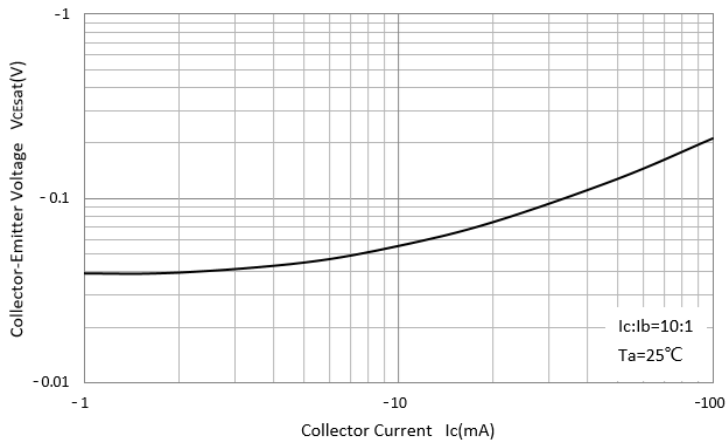
Static Characteristic



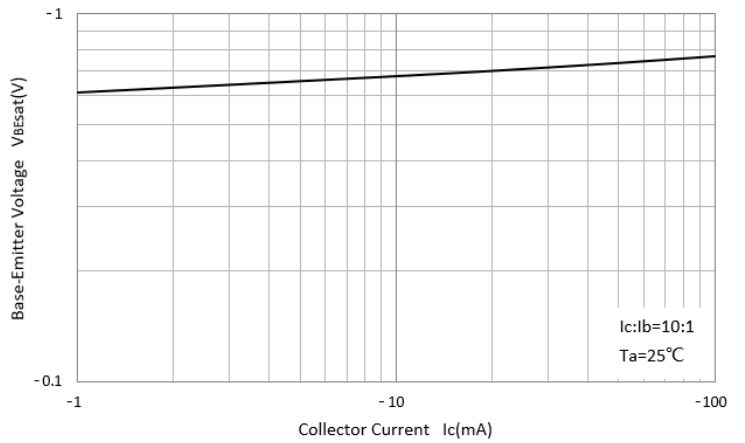
DC Current Gain



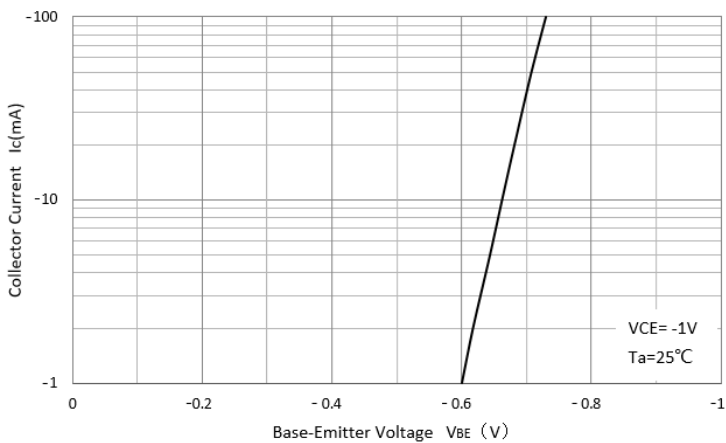
Collector-Emittor Saturation Voltage



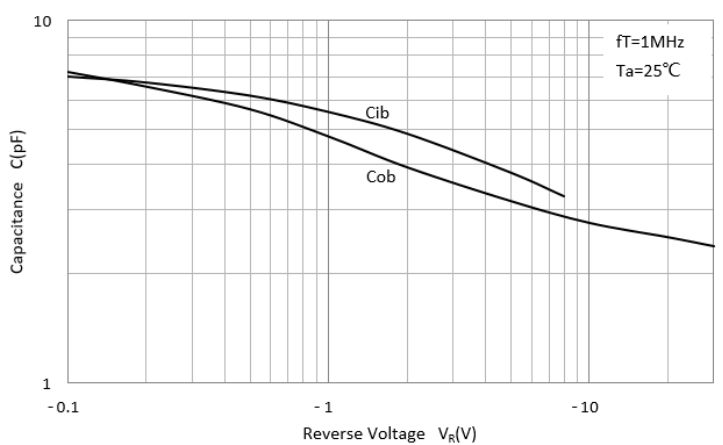
Base-Emittor Saturation Voltage



Base-Emittor On Voltage



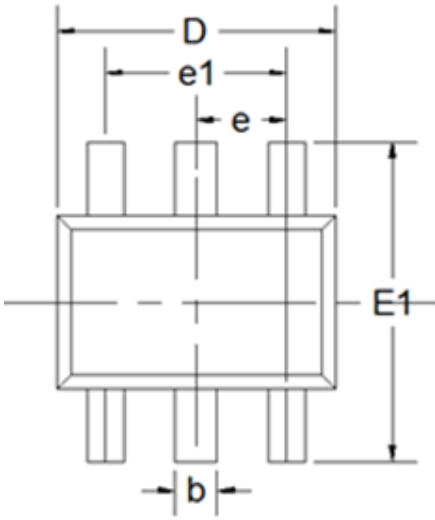
$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



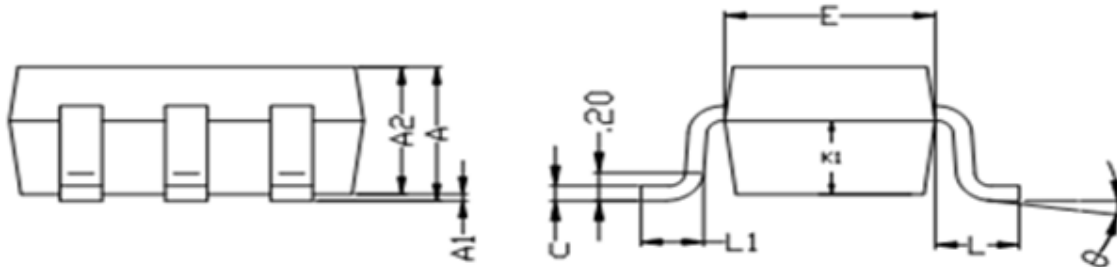


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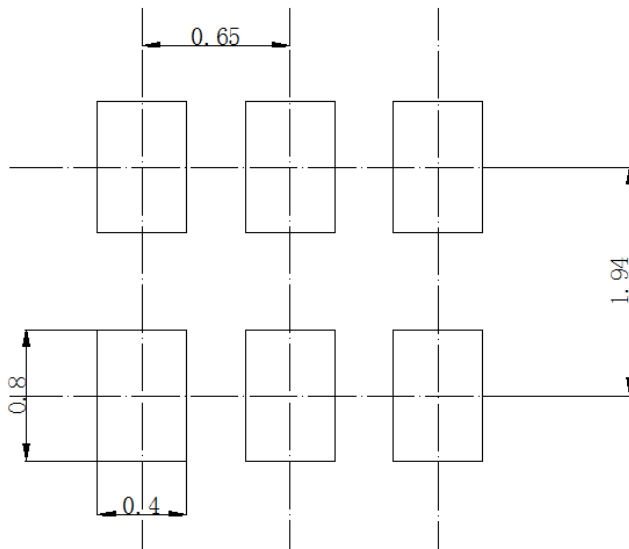
■SOT-363 Package Outline Dimensions



DIM	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.9	1.1
A1	0	0.004	0	0.1
A2	0.035	0.039	0.9	1
b	0.006	0.014	0.15	0.35
c	0.002	0.01	0.05	0.25
D	0.071	0.087	1.8	2.2
E	0.045	0.053	1.15	1.35
E1	0.085	0.096	2.15	2.45
e	0.026Typ		0.65Typ	
e1	0.047	0.055	1.2	1.4
L	0.021Typ		0.525Typ	
L1	0.01	0.018	0.26	0.46
φ	0°	8°	0°	8°



■SOT-363 Soldering Footprint



Unit: mm



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