

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	N1004- SOT26504TLV05
DATE	Oct. 04, 2021
REVISION	A0
DESCRIPTION	SMD Plastic-Encapsulate ESD Protection Array, SOT-26 series, 6 pads, ESD0504TL Type, Ultra Low Capacitance TVs Diodes Reverse Working Voltage: 5.0V, Clamping Voltage 10VC Max.@1.0A Operating Temp. Range -55°C ~+125°C, Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD ESD0504TL
PART CODE	SOT26504TLV05

VENDOR APPROVE			
Issued/Checked/Approved			
DATE: Oct. 04, 2021			

CUSTOMER APPROVE	
DATE:	

SMD ESD PROTECTION ARRAY SOT-26 SERIES

MAIN FEATURE



- Transient protection for high speed data line
- IEC61000-4-2 (ESD) +/-25KV (Air); +/-20KV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Cable dis-charge Event (CDE)
- Package optimized for high-speed line
- Protects four data lines and one Vcc line
- Low capacitance: 0.20pF (I/O to I/O)
- Low clamping voltage
- Low leakage current
- Each I/O pin can withstand over 1000 ESD strikes for +/-8.0KV contact discharge

APPLICATION

- Serial ATA
- High definition multi interface (HDMI)
- MDDI ports
- USB 2.0/3.0 power and data line protection
- Display ports
- Digital visual interfaces (DVI)

PART CODE GUIDE

RFQ
[Request For Quotation](#)

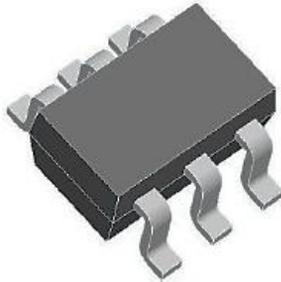
SOT26	504TL	S	V05
1	2	3	4

- 1) **SOT26**: SMD ESD Protection Array SOT-26 Series, 6 Pads
- 2) **504TL**: Type code for original part number ESD0504TL
- 3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel
- 4) **V05**: Marking code for “V05” on the case surface, Different Marking for different specification.

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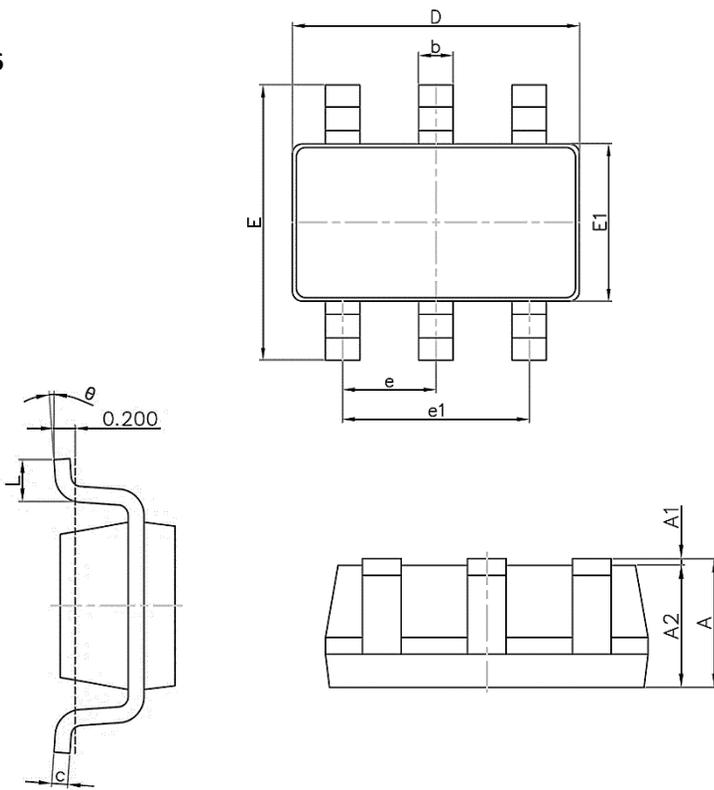
DIMENSION (Unit: Inch/mm)

Image for reference



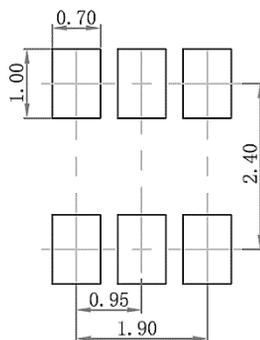
Marking: V05

SOT-26

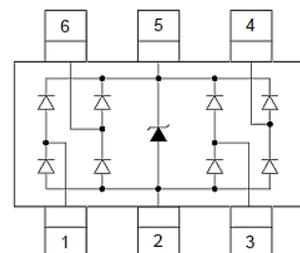


Symbol	Value (mm)		
	Min.	Typ.	Max.
A	1.05		1.25
A1	0		0.10
A2	1.05		1.15
b	0.30		0.50
c	0.10		0.20
D	2.82		3.02
E1	1.50		1.70
E	2.65		2.95
e	0.95		
e1	1.8		2.0
L	0.3		0.06
θ	0°		8°

Recommend Pad Layout



Circuit Diagram



Note: I/O pins: Pin 1,3,4,6; Pin 5: Vcc; Pin 2: GND

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MECHANICAL DATA

Case	Flammability Rating	Polarity	Mounting Position	Weight per piece
JEDEC SOT-26 molded plastic body	UL 94V-0	-	-	-

ABSOLUTE MAX. RATINGS AT Ta=25 °C (unless otherwise specified)

Parameter	SYMBOLS	VALUE	UNITS
		LIMIT	
ESD per IEC 61000-4-2 (Air)	V ESD	+/-25	KV
ESD per IEC 61000-4-2 (Contact)	V ESD	+/-20	KV
Peak Pulse Power (8/20µs)	P PP	60	W
Operating Temperature Range	T J	-55 ~+ 125	°C
Storage Temperature Range	T STG	-55 ~ +150	°C
Lead Solder Temperature- Max. (10 s Duration)	T L	260 /10s	°C

SMD ESD PROTECTION ARRAY SOT-26 SERIES
ELECTRICAL CHARACTERISTICS (Ta=25 °C unless otherwise specified)

Parameter		SYMBOLS	VALUE			UNITS
			Min.	Typical	Max.	
Reverse Working Voltage @ Any I/O pin to GND		V _{RWM}			5.0	V
Reverse Breakdown Voltage @ I _T = 1.0mA, Any I/O pin to GND		V _{BR}	6.0		9.0	V
Reverse Leakage Current @V _{RWM} = 5.0V, Any I/O pin to GND		I _R			1.0	μA
Clamping Voltage	@ I _{PP} = 1.0A, t _p = 8/20μs Any I/O pin to GND	V _C			10	V
	@ I _{PP} = 4.0A, t _p = 8/20μs Any I/O pin to GND				10	V
	@ I _{PP} = 8.0A, t _p = 8/20μs V _{cc} pin to GND				15	V
Parasitic Capacitance	@V _R =0V, f=1MHz Between I/O and I/O	C _{ESD}		0.20	0.3	pF
	@V _R =0V, f=1MHz Between I/O and GND			0.45	0.50	pF
	@V _R =0V, f=1MHz Between V _{cc} and GND			0.80		pF

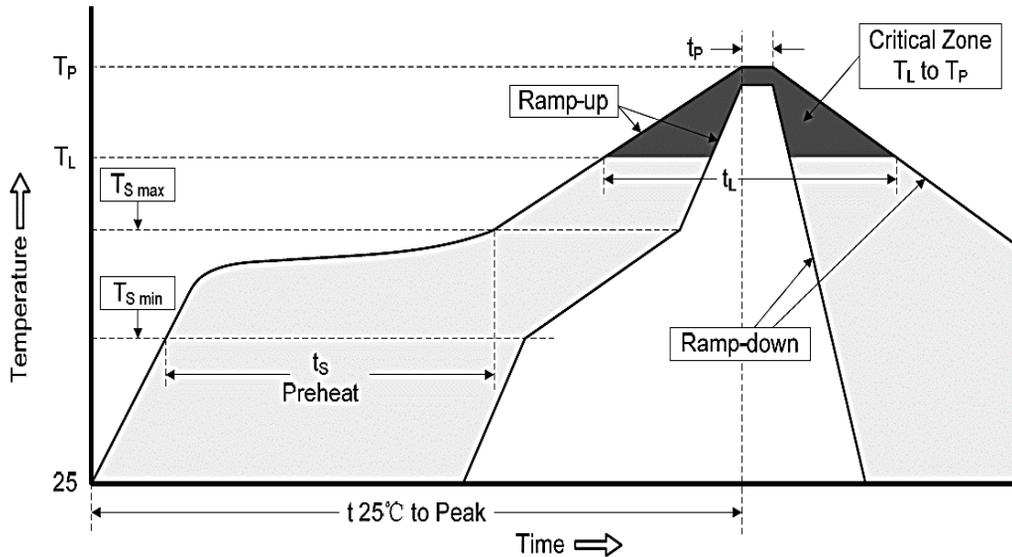
Note: I/O pins are Pin 1,3,4,6; Pin 5: V_{cc}; Pin 2: GND

SMD ESD PROTECTION ARRAY SOT-26 SERIES
RELIABILITY

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	TA=100°C for 1000 Hours at VR=80% Rated VR	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, TA=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	TA=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

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SUGGESTED REFLOW PROFILE (For Reference Only)



Profile Feature		Pb-Free Assembly
Average Ramp-up Rate (Ts Max to Tp)		3°C/second Max
Preheat	Temperature Min (Ts Min.)	150°C
	Temperature Max (Ts Max.)	200°C
	Time (ts Min. to ts Max.)	60 ~ 180 seconds
Time maintained above	Temperature (Tl)	217°C
	Time (tl)	60 ~ 150 seconds
Peak/Classification Temperature (Tp)		260 °C
Time within 5°C of actual Peak Temperature (tp)		20 ~ 40 seconds
Ramp-down rate		6 °C /Second Max.
Time 25 °C to Peak Temperature		8 minutes Max.
Suggest reflow times		3 Times Max.

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RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig 1 Power Derating Curve

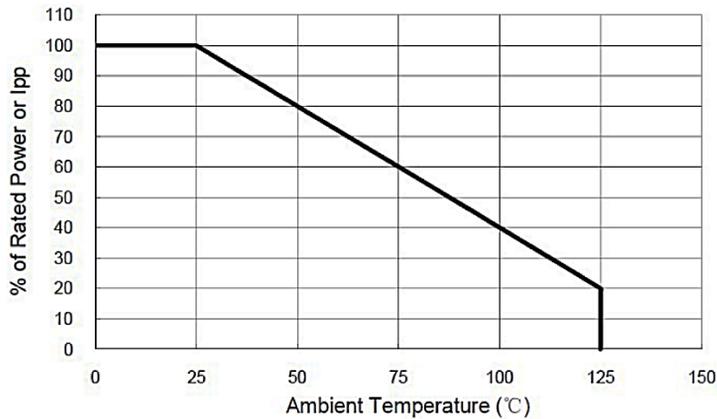


Fig 2 Clamping Voltage vs Peak Pulse Current

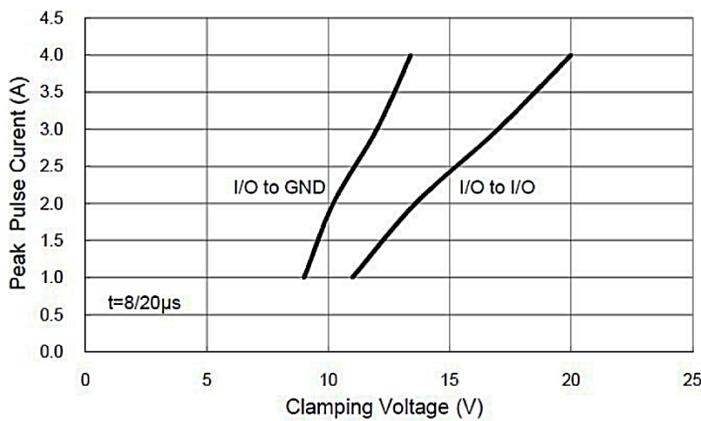
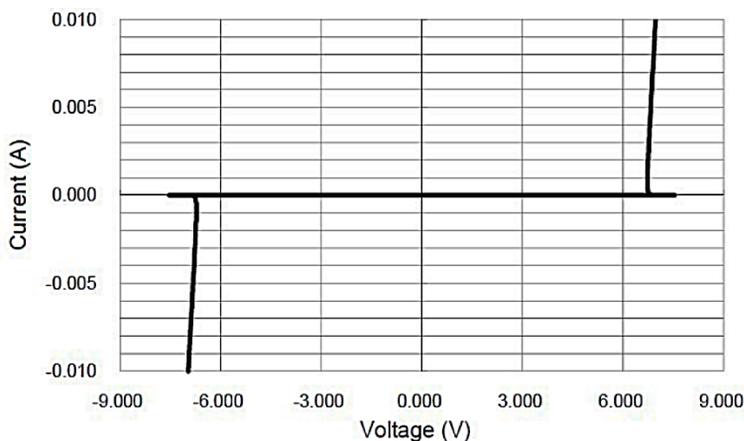


Fig 3 Voltage Sweeping of I/O to I/O



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RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

Fig 4 Voltage vs Capacitance

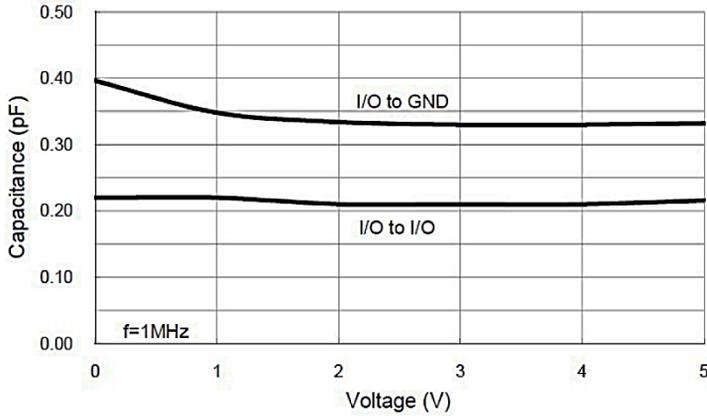


Fig 5 ESD Clamping of I/O to GND (+8kV Contact per IEC 61000-4-2)

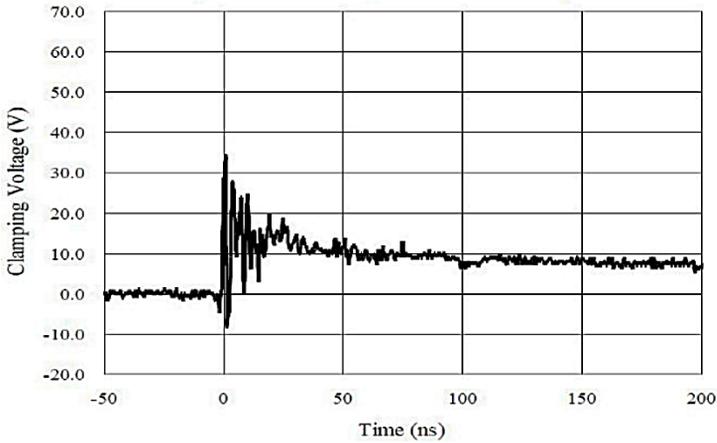
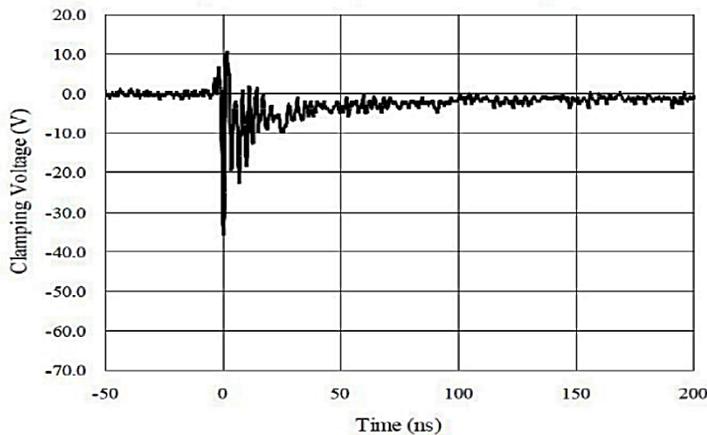


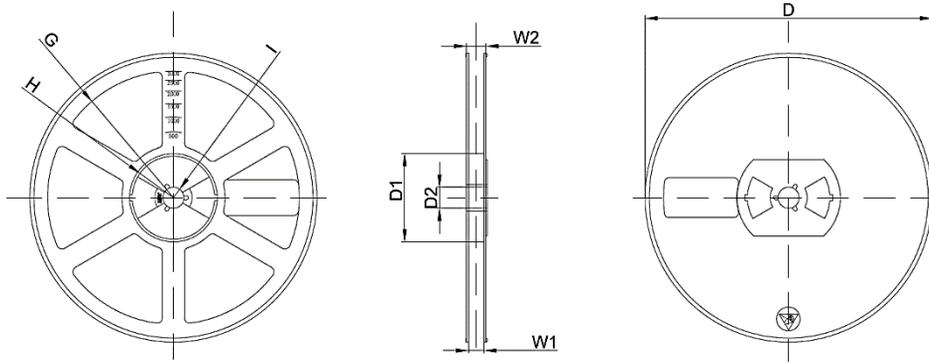
Fig 6 ESD Clamping of I/O to GND (-8kV Contact per IEC 61000-4-2)



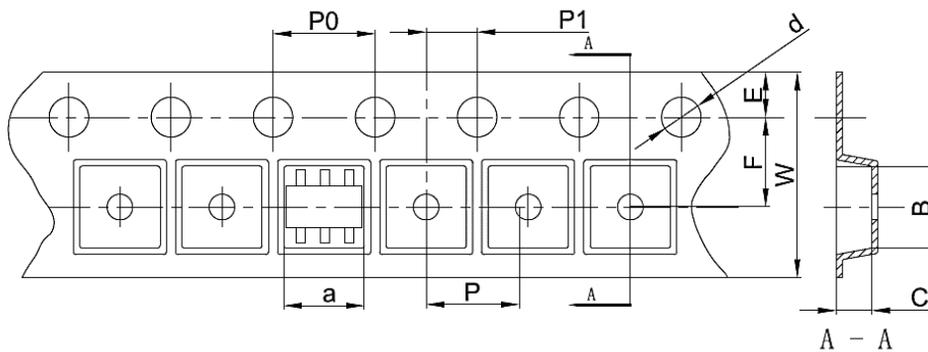
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TAPE/REEL (Unit: mm)

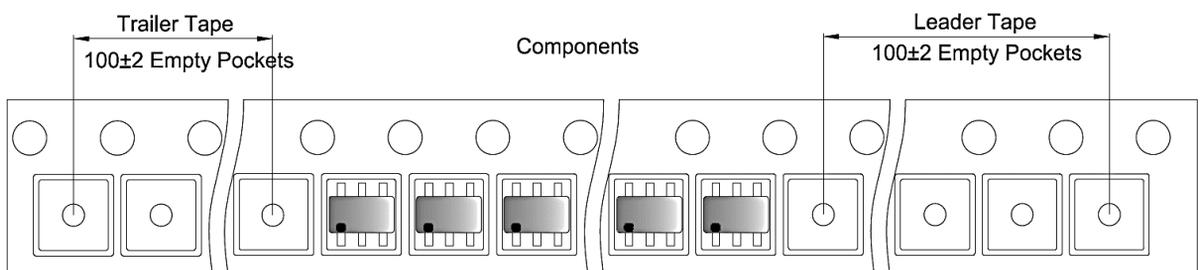
All Devices are packed in accordance with EIA standard RS-481-A and specifications.



D	D 1	D 2	G	H	I	W 1	W 2
Ø180.00	60.0	13.0	R78.0	R25.60	R6.5	9.5	13.10



a	B	C	d	E	F	P 0	P	P 1	W
3.17	3.23	1.37	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00



SMD ESD PROTECTION ARRAY SOT-26 SERIES

SPQ PACKAGE for Reference

Item	Unit	Value
Case Code		SOT-26
Reel Size	Inch	7
Reel Size	mm	178
Tape Space	mm	/
SPQ /Reel	pcs	3000
Weigh /SPQ	LBS	
Weigh /SPQ	KGs	
Qty. Per Box	pcs	6,000
Inner Box	Inch	L8.0*W8.0*H1.5

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