ETEK
Microelectronics

ES12P4N3A

Transient Voltage Suppressor

Features

- 5800 Watts Peak Power (tp = 8/20μs)
- Fast Response time: Typically<1ns
- Excellent Clamping Capability
- Low Inductance
- Low profile package

IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
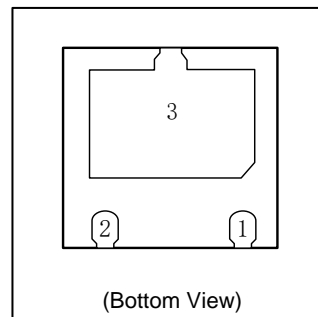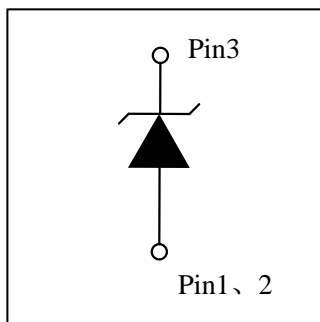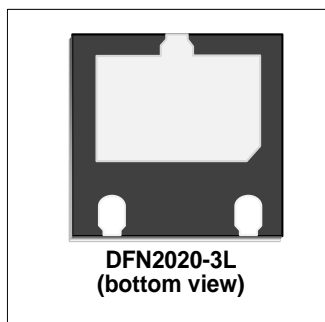- **IEC 61000-4-5 (Lightning) 240A (8/20μs)**

Mechanical Characteristics

- DFN2020-3L package
- Molding compound flammability rating: UL 94V-0
- Marking : Making Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

Applications

- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Computer & Consumer Electronics
- Industrial Electronics
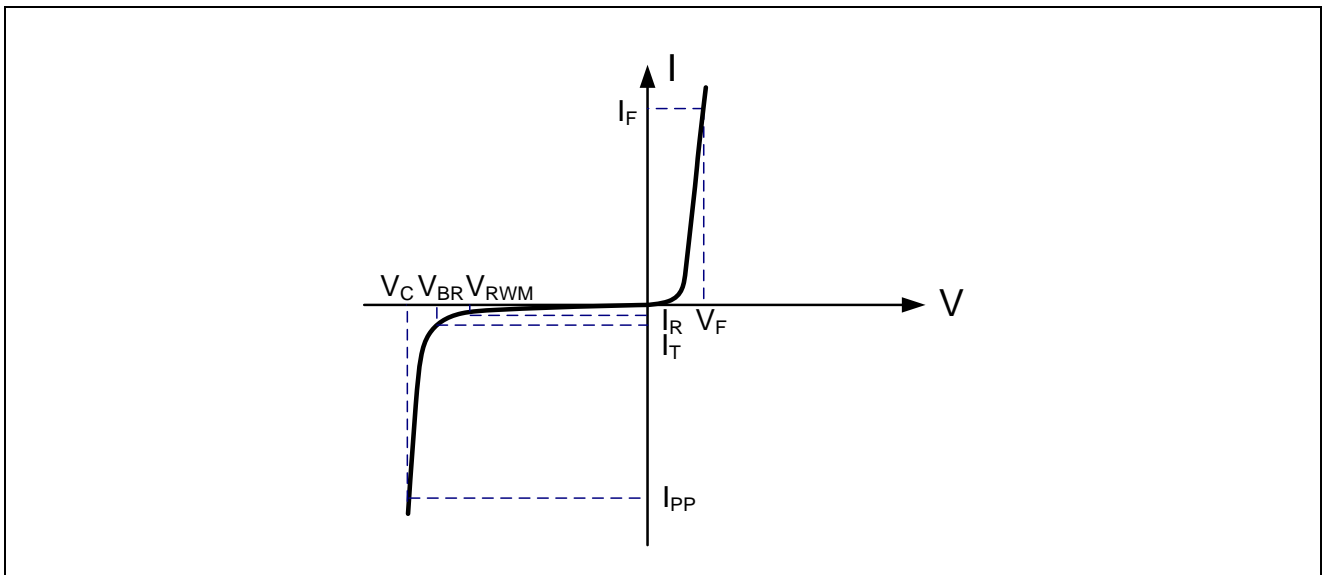- Microcontroller Input Protection

PIN Configuration

DFN2020-3L (bottom view)

Pin3

Pin1、2

3

2   1

(Bottom View)

Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power（t_p=8/20μs）	P_{PP}	5800	Watts
Operating Temperature	T_J	-55 to + 125	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Electrical Parameters (T=25℃)

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Reverse Stand-Off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F

Electrical Characteristics

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	13.3		15	V
Reverse Leakage Current	I_R	V_{RWM}=12V,T=25°C			200	nA
Forward Voltage	VF	IF=10mA	0.6		1.0	V
Peak Pulse Current	I_{PP}	tp =8/20μs			240	A
Clamping Voltage[1]	V_C	I_{PP}=1A, t_p=8/20μs		15	18	V
Clamping Voltage[1]	V_C	I_{PP}=150A, t_p=8/20μs		19	22	V
Clamping Voltage[1]	V_C	I_{PP}=240A, t_p=8/20μs		22	25	V
Dynamic Resistance[2,3]	R_{DYN}	TLP=0.2/100ns		0.05		Ω
Junction Capacitance	C_j	VR = 0V, f = 1MHz		1535	2000	pF

Note：1.Measured from pin 3 to pin 1& pin 2.
2. TLP Setting：t_p=100ns, t_r=0.2ns, I_{TLP} and V_{TLP} sample window:t_1=70ns to t_2=90ns.
3. Dynamic resistance calculated from IPP=4A to IPP=16A using "Best Fit"

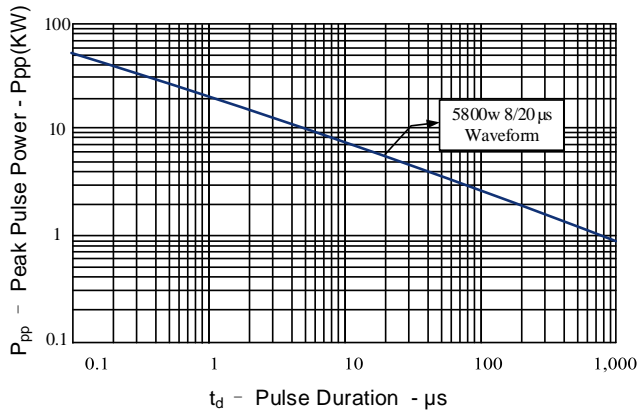## Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

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Figure 2: Power Derating Curve

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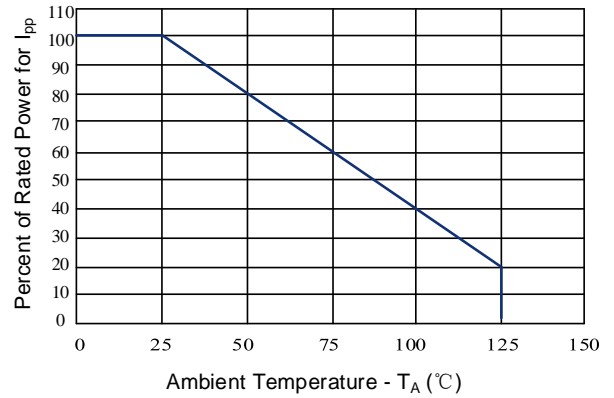
Figure 3: Clamping Voltage vs. Peak Pulse Current

Figure 3: Clamping Voltage vs. Peak Pulse Current

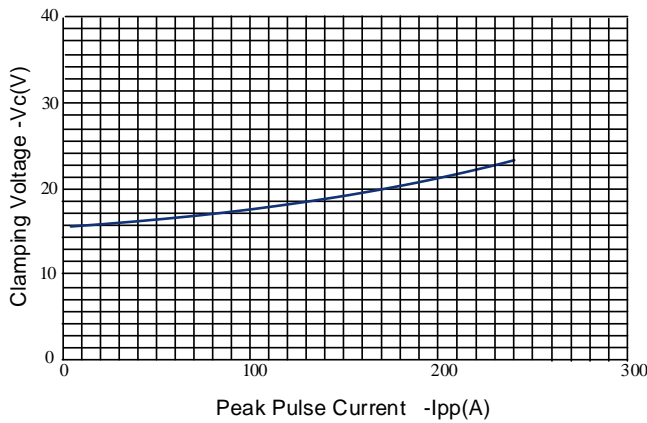**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**

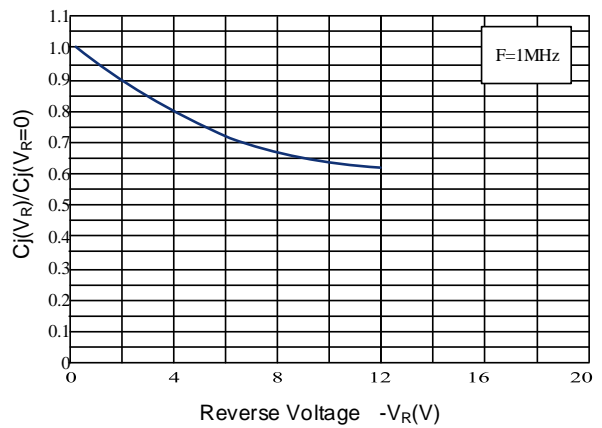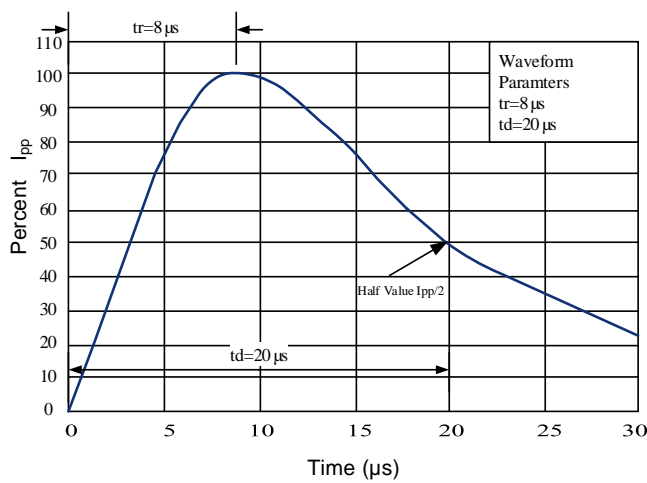Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

Figure 5: 8/20μs Pulse Waveform

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Figure 6: TLP I-V Curve

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Outline Drawing –DFN2020-3L

PACKAGE OUTLINE

TOP VIEW

SIDE VIEW

BOTTOM VIEW

DFN2020-3L

SYMBOL	MILIMETER		
	MIN	NOM	MAX
A	0.5	0.55	0.60
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
b1	0.20REF		
c	0.152REF		
D	1.90	2.00	2.10
D2	1.40	1.50	1.60
e	1.30BSC		
E	1.90	2.00	2.10
E2	0.95	1.05	1.15
E3	0.20	0.30	0.40
L	0.35	0.40	0.45
L1	0.20	0.25	0.30
h	0.20REF		
K	0.20	0.30	0.40

Land Pattern

Marking Codes

Part Number	Marking Code	
ES12P4N3A	M12C XXXX	M12C=Specific Device Code XXXX=Lot Code

Package Information

Qty：3k/Reel

Revision History

NO.	Version	Date	Revision Item	Revision History	Confirm
1	1.0	2018-12-05			