

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## AZ9143-04F-MS

Product specification

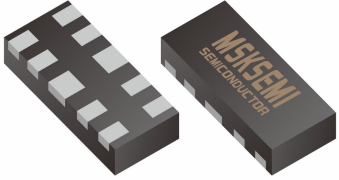
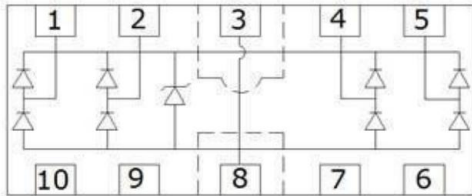

**Features**

- 150 Watts peak pulse power (tp = 8/20µs)
- Transient protection for high speed data lines to IEC 61000-4-2 (ESD) ±15kV (air), ±8kV (contact) IEC 61000-4-4 (EFT) 40A(5/50ns)
- Working voltages : 3.3V
- Protects two or four I/O lines
- Ultra Low capacitance:0.3pf (typical between I/O channel)
- Low operating and clamping voltages
- Solid-state silicon avalanche technology

**Applications**

- High Definition Multi-Media Interface (HDMI)
- USB 1.1/2.0/3.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box

**Reference News**

PACKAGE OUTLINE	Pin Configuration	Marking
		
<p>DFN2510</p>		

**Maximum Rating** @ Ta=25C unless otherwise specified

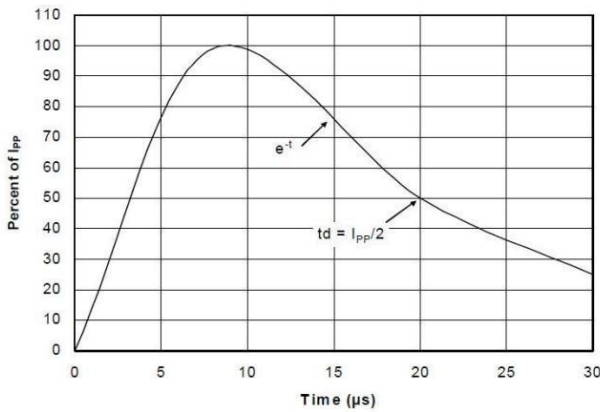
Symbol	Parameter	Ratings	Units
P <sub>PK</sub>	Peak Pulse Power (tp = 8/20μs)	150	Watts
T <sub>L</sub>	Lead Soldering Temperature	260( 10sec.)	°C
T <sub>J</sub>	Operating Temperature	-55 to + 125	°C
T <sub>STG</sub>	Storage Temperature	-55 to + 150	°C

**Electrical Characteristics**@ Ta=25C unless otherwise

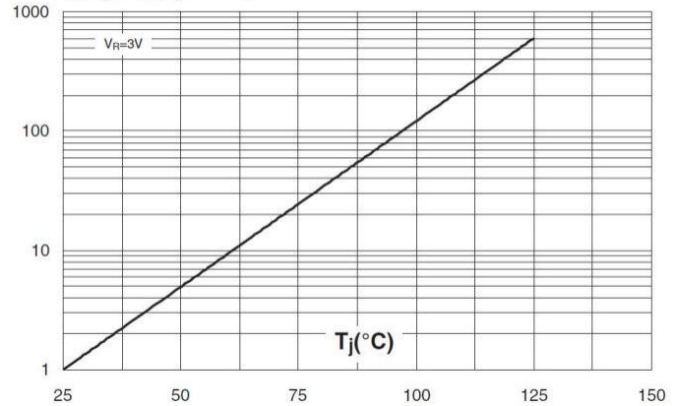
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V <sub>RWM</sub>	Reverse Working Voltage	Any I/O to Ground		3.3		V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>T</sub> = 1mA, Any I/O to Ground	4.5			V
I <sub>R</sub>	Reverse Leakage Current	V <sub>RWM</sub> = 5V, Any I/O to Ground			1	μA
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> = 15mA		0.85	1.2	V
V <sub>C</sub>	Clamping Voltage	I <sub>PP</sub> = 1A, tp =8/20μs, any I/O pin to Ground			9.8	V
		I <sub>PP</sub> = 5A, tp =8/20μs, any I/O pin to Ground			15	V
C <sub>J</sub>	Junction Capacitance	V <sub>R</sub> = 0V, f = 1MHz, between I/O pins		0.25	0.3	pF
		V <sub>R</sub> = 0V, f = 1MHz, any I/O pin to Ground		0.5	0.6	pF

**Typical Characteristics** @  $T_a=25^\circ\text{C}$  unless otherwise specified

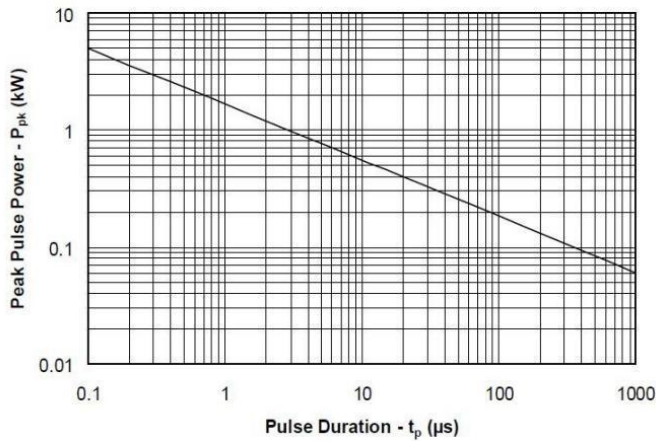
**Pulse Waveform**



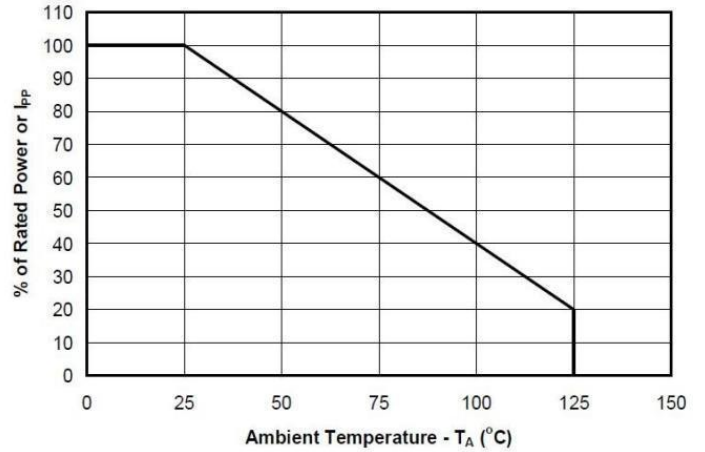
$I_R[T_j] / I_R[T_j=25^\circ\text{C}]$



**Non-Repetitive Peak Pulse Power vs. Pulse Time**

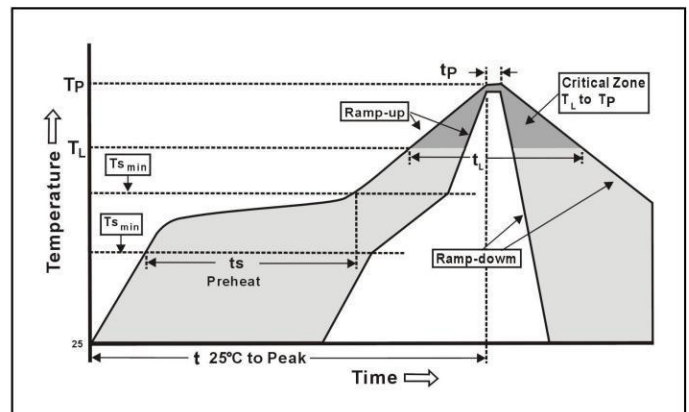


**Power Derating Curve**

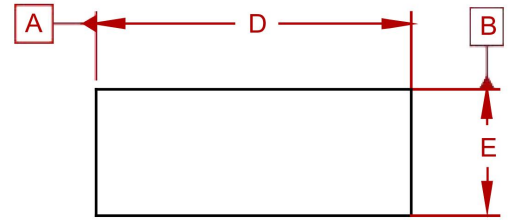
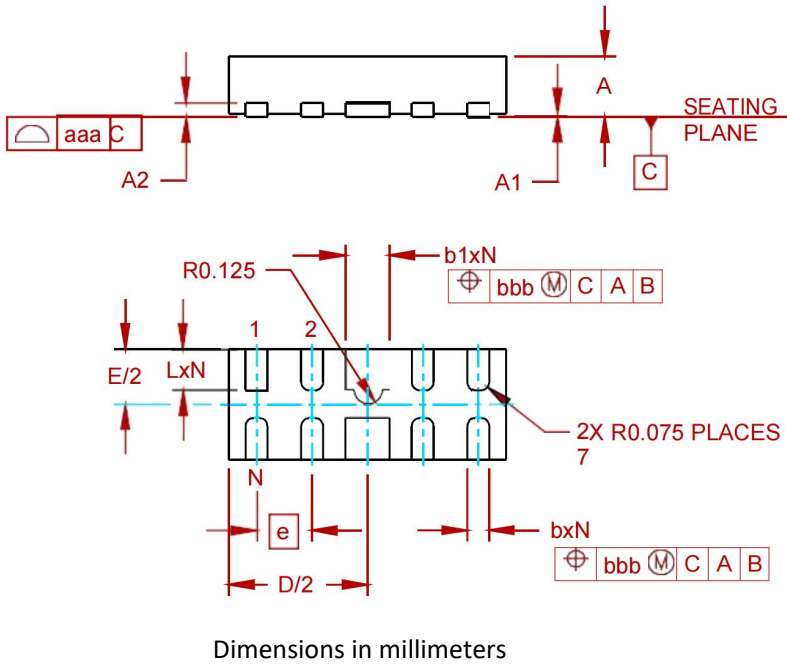


**Soldering Parameters**

Reflow Condition		Fb – Free assembly
Pre Heat	- Temperature Min ( $T_{s(\text{Min})}$ )	150°C
	- Temperature Max ( $T_{s(\text{Max})}$ )	200°C
	- Time (Min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second Max
$T_{s(\text{Max})}$ to $T_L$ - Ramp-up Rate		3°C/second Max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_l$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		$250^{+0/-5} \text{ }^\circ\text{C}$
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second Max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes Max.
Do not exceed		260°C

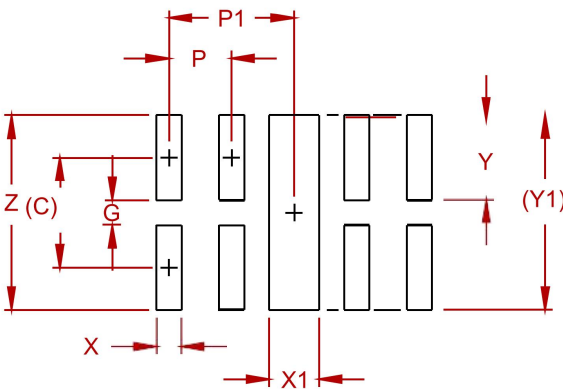


**PACKAGE MECHANICAL DATA**



DIM	DIMENSI			ONS		
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.020	.023	.026	0.50	0.58	0.65
A1	0.00	.001	.002	0.00	0.03	0.05
A2	(.005)			(0.13)		
b	.006	.008	.010	0.15	0.20	0.25
b1	.014	.016	.018	0.35	0.40	0.45
D	.094	.098	.102	2.40	2.50	2.60
E	.035	.039	.043	0.90	1.00	1.10
e	.020 BSC			0.50 BSC		
L	.012	.015	.017	0.30	0.38	0.425
N	8			8		
aaa	.003			0.08		
bbb	.004			0.10		

**Suggested Pad Layout**



DIM	DIMENSIONS	
	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.039	1.00
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55

Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
AZ9143-04F-MS	DFN2510	3000

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