

# GULLWING

HIGH DENSITY PRODUCTS FOR AEROSPACE & DEFENSE



Bipolar Transistors • Rectifiers • MOSFETs • JFETs • Zeners



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\*TX, TXV, and S-level screening available for all devices. Screening based on MIL-PRF-19500.  
Screening flows available on request.

SSDI is JANS certified and ISO 9001 / AS9100 certified

SSDI has been a pioneer in semiconductor manufacturing for over 50 years and has earned a reputation for setting the highest standards of reliability and performance. SSDI's products meet the critical needs of many Aerospace and Defense applications.



ISO 9001 & AS9100 Certified



JANS Certified



SSDI currently owns three properties within a 3-mile area in the city of La Mirada, California



Firestone Facility



Knott Facility



Wafer Fab Facility

**For additional information and data sheets:**  
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**Warnings**

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact SSDI.

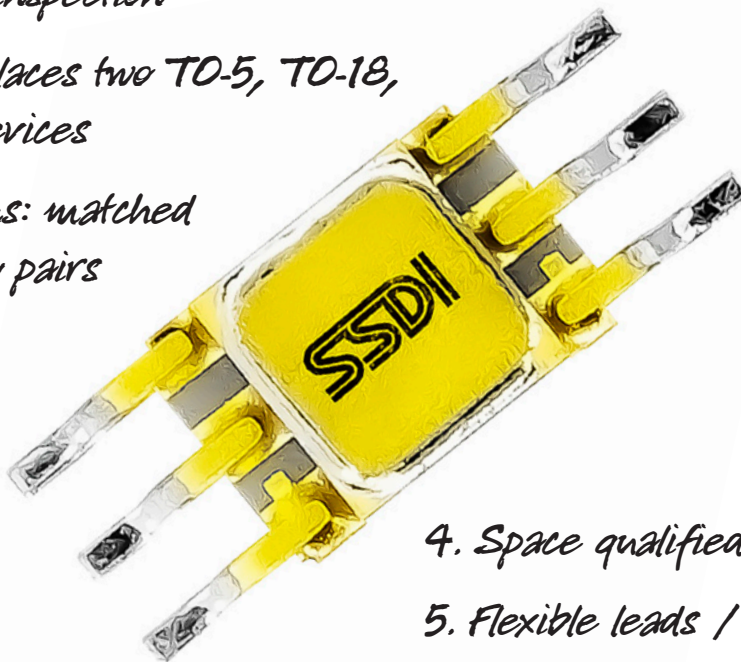
SSDI components may be used in life-support devices or systems only with the express written approval of SSDI. Failure of such components can be reasonably expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intentionally implanted in a human body, or used to support and/or maintain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

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## 6 REASONS TO ADD GULLWINGS TO HIREL DESIGNS

1. Easy solderability inspection
2. One Gullwing replaces two TO-5, TO-18, TO-46, or UB devices
3. Dual configurations: matched or complementary pairs available



4. Space qualified / heritage
5. Flexible leads / stress relief
6. Small, lightweight hermetic package

### Comparison of Gullwing and 2 x TO-5

Gullwing offers board space savings and facilitates inspection of solder connections



### Comparison of Gullwing and 2 x UB

Gullwing facilitates inspection of solder connections



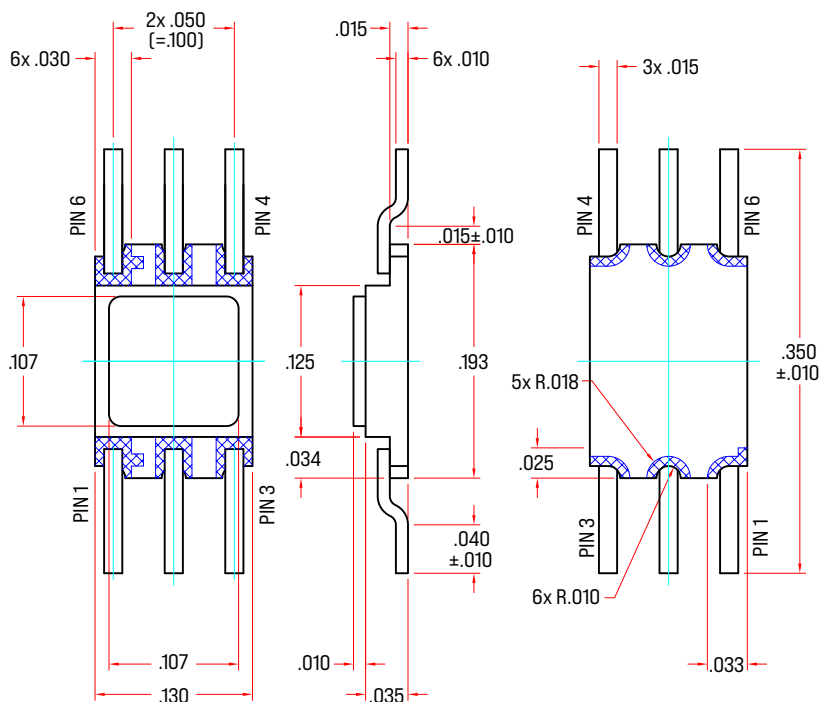
### Case Outline: Gullwing

Weight: 0.06 g typ

Profile: .045" max

Footprint: .130" x .360" max

Actual Size



## SSDI Gullwing Dual Transistors

Part Number	V <sub>CE0</sub> (V)	I <sub>C</sub> (A)	H <sub>FE</sub> min	H <sub>FE</sub> max	P <sub>D</sub> (W)	t <sub>(off)</sub> max (ns)	f <sub>T</sub> min (MHz)	Polarity	Description	Data Sheet
SFT2369A2GW	15	0.1	20	120	0.5	18	500	Dual NPN	Replacement for 2N2369AU	TR0045
SFT4957A2GW	30	0.03	30	165	0.2	–	–	Dual PNP	Enhanced replacement for 2N4957UB; Complement to SFT2857A2	TR0077
SFT3904A2GW	40	0.2	30	–	0.6	250	300	Dual NPN	Replacement for 2N3904AU; Complement to SFT3906A2	TR0034
SFT3906A2GW	40	0.2	30	–	0.6	300	250	Dual PNP	Replacement for 2N3906AU; Complement to SFT3904A2	TR0038
SFT2222A2GW	50	0.8	30	–	0.66	300	250	Dual NPN	Replacement for 2N2222AU; Complement to SFT907A2	TR0030
SFT2907A2GW	60	0.6	50	–	0.66	300	200	Dual PNP	Replacement for 2N2907AU; Complement to SFT2222A2	TR0031
SFT85707GW	60	0.6	50	–	0.66	300	200	NPN & PNP	Replaces 2N2857 (NPN) & 2N2907 (PNP)	TR0079
SFT390604A2GW	60	0.4	30	–	0.6	300	300	NPN & PNP	Replaces 2N3906AU (PNP) & 2N3904AU (NPN)	TR0036
SFT22907GW	60	0.6	30	–	0.66	300	200	NPN & PNP	Replaces 2N2222AU (NPN) & 2N2907AU (PNP)	TR0032

### Examples of Transistors Supported for Gullwing Devices

Matched / Complementary Pairs Available - Contact factory to meet additional requirements

NPN									PNP					
Device Type	I <sub>C</sub> (mA)	BV <sub>CE0</sub>	Device Type	I <sub>C</sub> (mA)	BV <sub>CE0</sub>	Device Type	I <sub>C</sub> (mA)	BV <sub>CE0</sub>	Device Type	I <sub>C</sub> (mA)	BV <sub>CE0</sub>	Device Type	I <sub>C</sub> (mA)	BV <sub>CE0</sub>
2N2639	30	45	2N2484	50	60	2N718/A	500	50	2N2604	30	45	2N3496	100	80
2N2640	30	45	2N3946	50	60	2N1890	500	60	2N2605	30	45	2N869/A	200	18
2N2641	30	45	2N3947	50	60	2N2060	500	60	2N930/A	30	45	2N3964	200	45
2N2642	30	45	2N708	100	15	2N2223/A	500	60	2N706/A	50	15	2N3250/A	200	60
2N2643	30	45	2N5066	100	20	2N2652	500	60	2N5230	50	20	2N3251/A	200	60
2N2644	30	45	2N3726	100	45	2N1893	500	80	2N4937	50	40	2N3962	200	60
2N2913	30	45	2N3727	100	45	2N5793	600	40	2N4938	50	40	2N3965	200	60
2N2914	30	45	2N720/A	150	80	2N5794	600	40	2N4939	50	40	2N3963	200	80
2N2915	30	45	2N3013	200	15	2N5795	600	60	2N3798	50	60	2N4015	300	60
2N2916	30	45	2N4449	200	15	2N5796	600	60	2N3799	50	60	2N4016	300	60
2N2917	30	45	2N3014	200	20	2N3053/A	700	60	2N3806	50	60	2N1132/A	600	40
2N2918	30	45	2N2368	500	15	2N1714	750	60	2N3807	50	60	2N2904/A	600	40
2N2919	30	60	2N2369/A	500	15	2N2218/A	800	30	2N3808	50	60	2N2905/A	600	40
2N2920	30	60	2N3648	500	15	2N2219/A	800	30	2N3809	50	60	2N4854	600	40
2N2857	40	15	2N3227	500	20	2N2221/A	800	30	2N3810	50	60	2N4855	600	40
2N2722	40	45	2N3300	500	30	2N2222/A	800	30	2N3811	50	60	2N2906A	600	60
2N2721	40	60	2N3302	500	30	2N5581	800	40	2N2800	80	35	2N2907/A	600	60
2N2481	50	15	2N3724	500	30	2N5582	800	40	2N2944/A	100	10	2N3485/A	600	60
2N706	50	15	2N2480/A	500	40	2N697	800	40	2N2945/A	100	20	2N3486/A	600	60
2N2453	50	30	2N1613	500	50	2N6989	800	50	2N2946/A	100	35	2N6987	600	60
2N2903	50	30	2N3725	500	50				2N3494	100	80			

## SSDI Gullwing Small Signal Diodes

Part Number	$V_R$ (V)	$I_O$ (A)	$t_{RR}$ (nsec)	$I_{FSM}$ (A)	$V_F$ typ (V)	$V_F$ max (V)	$I_R$ typ ( $\mu$ A)	$I_R$ max ( $\mu$ A)	Data Sheet
SDR5712A2GW	16	0.08	-	-	-	1.00	-	0.10	RC0087
SDR3595A2GW	125	0.15	60	0.5	0.98	1.00	0.001	0.002	RU0002

## Examples of Small Signal Diodes Supported for Gullwing Devices

Part Number	$t_{RR}$ (nsec)	$I_O$ (mA)	$V_R$ (V)
1N4447	2	200	75
1N6638	4.5	300	125
1N4607	10	200	85
1N3070	50	100	175
1N6663	5000	500	600



## SSDI Gullwing Small Signal MOSFETs

Part Number	$V_{DSS}$ (V)	$I_D$ (A)	$R_{DS(ON)}$ typ ( $\Omega$ )	$R_{DS(ON)}$ max ( $\Omega$ )	$P_D$ (W)	Polarity	Data Sheet
SFF7002KA2GW	60	0.3	2.8	3.5	0.5	N-Channel	FT0024

## SSDI Gullwing Small Signal JFETs

Part Number	$V_{GS}$ (V)	$V_{DG}$ (V)	$P_D$ (W)	$R_{DS(ON)}$ typ ( $\Omega$ )	$R_{DS(ON)}$ max ( $\Omega$ )	Data Sheet
SFF4393A2GW	40	40	0.5	-	100	FT0010
SFF4392GW	40	40	1.8	53	100	FT0025
SFF4393GW	40	40	1.8	60	100	FT0025

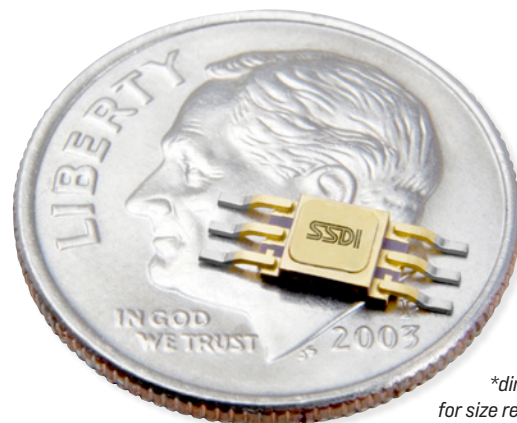
## Examples of Small Signal JFETs Supported for Gullwing Devices

Part Number	$V_{GSS}$ max (V)	$V_{GSS\ off}$ max (V)
2N3819	-25	-8
2N4117	-40	-1.8
2N4338	-50	-1
2N5245	-30	-0.6
2N6449	-300	-15

## SSDI Gullwing Small Signal 500 mW Zeners

## Examples of Small Signal Zeners Supported for Gullwing Devices

Part Number	$V_Z$ (V)	$I_{ZM}$ (mA)
1N4614	1.8	120
1N6324	10	43
1N6337	36	12
1N6347	91	4.7
1N6355	200	2.1





## SSDI Delivers HiRel Product Innovation & Solutions for New / Legacy Designs



### 3H FOCUS

- 50+ years serving the HiRel market
- JANS certified
- ISO 9001 / AS9100 certified
- Developing new, innovative products with performance not matched by other manufacturers' products
- Exploring new technology (e.g. GaN, SiC, etc.)



### DESIGN & PACKAGING FLEXIBILITY

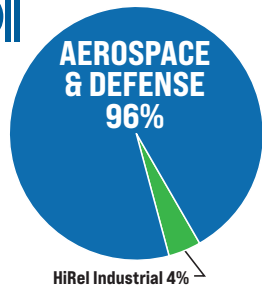
- Target specific electrical characteristics to satisfy customer requirements
- Wide range of packaging options from surface mount to legacy packages
- Improve density of board design which leads to overall system cost improvements



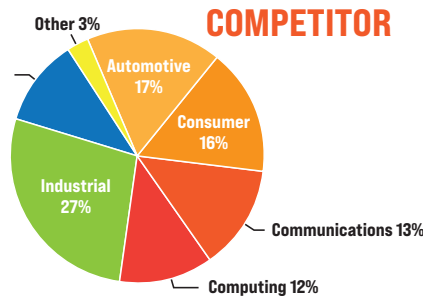
### SOLUTIONS

- Broad capabilities: catalog showcases capability, not limited to current offerings
- Offer replacements for most products from competitors (e.g. Microsemi, Infineon / IR, TI, Siliconix, etc.)
- Sustainment: support for the life of programs; work with customer to accommodate small to medium quantities

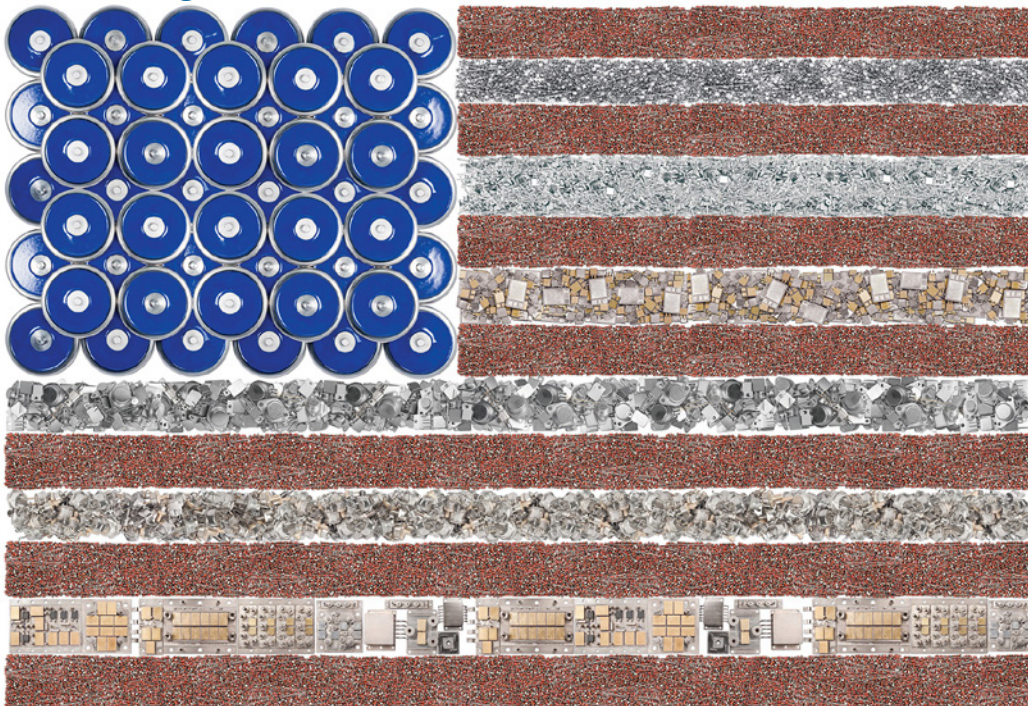
## Sales by Sector



### AEROSPACE & DEFENSE 11%



## Wide Range of Hermetic Products - Made in the USA



### SILICON

- Rectifiers
- Schottkys
- Zeners
- TVS
- MOSFETs
- Bipolar Transistors
- JFETs
- PIN Diodes
- Thyristors
- IGBTs

### SILICON CARBIDE (SiC)

- Schottkys
- MOSFETs

### GALLIUM NITRIDE (GaN)

- Power FETs

### ASSEMBLY PRODUCTS

- LDO
- DC-DC Converters
- Hybrids
- Assemblies
- Power Modules

*Notes: Minimum order may apply.  
Most products available in die form.*

## SEMICONDUCTOR MARKET OVERVIEW

While SSDI has the capabilities to supply most **standard, generic products** (represented by the orange section below), its sales primarily address the need for **End of Life / DMS Solutions** or **New, Innovative Solutions**, which are not readily available through high volume manufacturers or distribution channels (represented by the 2 blue sections below).



## SEMICONDUCTOR MARKET TREND

Due to market changes (i.e. mergers, acquisitions, etc.), there is an increasing trend of planned obsolescence or product discontinuation due to insufficient demand across the entire customer base. As inventory of **standard, generic products** shrinks, SSDI is able to fill these gaps and even fulfill small- to medium-sized orders. SSDI's flexibility also allows it to offer application specific solutions. With this investment in the specific needs of each program, SSDI benefits by supporting the full life span of the program while alleviating potential supply concerns for the customer.

**When demand diminishes, competitors often discontinue products**



## HOW SSDI RESCUES PROGRAMS FROM:

### RELIABILITY ISSUES

- Offer up to JANS level / equivalent S level screening
- 2 JANS certified facilities in the USA
- 50+ years supporting aerospace & defense applications
- In-house screening capabilities (additional screening options to match mission specs)

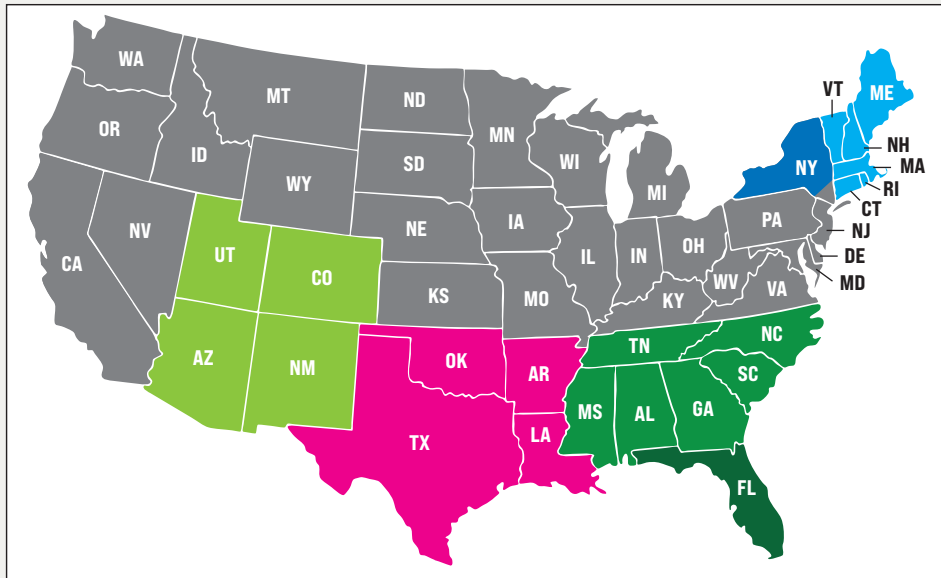
### SUPPLY ISSUES

- Offer replacements for most products from competitors (e.g. Microsemi, Infineon / IR, TI, Siliconix, etc.)
- Maintain materials inventory (work with customer to forecast future orders)
- Shorter lead times (TX, TXV, and S level equivalent screening - offering faster delivery than out of stock QPL devices awaiting approval)
- Work with customer to accommodate small orders

### PERFORMANCE ISSUES

- Design flexibility (target key electrical characteristics to match mission specs)
- Packaging flexibility (improve density of board design which leads to overall system cost improvements)
- Build to data sheets & SCDs
- Product development (offer higher performance than standard, generic products)

# Domestic Sales Representatives



## Micro Technology Group

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Mansfield, MA 02048  
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[sales@mtgelectronics.com](mailto:sales@mtgelectronics.com)

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[sales@zimmermansales.com](mailto:sales@zimmermansales.com)

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[info@emarep.com](mailto:info@emarep.com)

## FLA. Technology Sales, Inc. (FL)

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## CentraMark Technical Sales Associates

(TX, OK, AR, LA)  
1705 Analog Dr.  
Richardson, TX 75081-1944  
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## EAST ASIA SOUTH ASIA



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