



**SOLID STATE DEVICES, INC.**  
**NEW SCHOTTKY SOLUTIONS**



*Centertap Schottky Rectifiers*

*300 Volt Hermetic Silicon  
Schottky Rectifiers*



*SSR5822S.22 Series: Alternative to 1N5822US*

**AS9100 & ISO 9001 Registered  
JANS Certified Manufacturer**

Solid State Devices, Inc. has delivered high reliability, hermetic power semiconductors, modules, and assemblies to the aerospace and defense industries for over 50 years. This catalog consists of a small sampling of SSDI's new hermetic, silicon Schottky rectifier products. These new surface mount products include 300 volt versions, which are the highest voltage ratings available for hermetic, silicon Schottky devices.

Additional products and data sheets are available on SSDI's website, [www.ssd-power.com](http://www.ssd-power.com). Besides its wide range of standard products, SSDI's engineering and manufacturing capabilities allow it to deliver unique products in accordance with SSDI or customer source control drawings. Contact SSDI at (562) 404-4474 or [ssdi@ssdi-power.com](mailto:ssdi@ssdi-power.com) for more information and / or sample requests.

## NEW SCHOTTKY SOLUTIONS

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

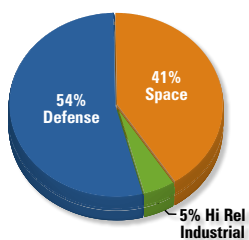
## SOLID STATE DEVICES, INC.

**Heritage** ▪ Founded in 1967, SSDI has been committed to the high reliability aerospace market for over 50 years. Each member of the technical management team averages over 20 years of industry experience.

**Leader in High Reliability Semiconductors** ▪ Power and high voltage discretes and assemblies. SSDI is a JANS certified and ISO 9001 / AS9100 registered facility.

**Solution Focused** ▪ SSDI is dedicated to provide unique solutions for obsolescence, reliability, performance, and other custom high reliability applications.

Sales by Sector



**Custom Discretes, Modules & Assemblies** ▪ SSDI leverages a unique offering of discrete components with over 50 years of power and high voltage module experience, providing value added, integrated solutions.

**Deliver Value** ▪ Quality, reliability, delivery, performance, service.

**Growth and Strength** ▪ Strong steady growth, capable of doubling current manufacturing and support capacity.

## SSDI ADVANTAGES

- **Flexible supplier**
  - Standard or custom solutions
  - Small quantities welcomed
  - Samples available
- **Broad hermetic packaging capacity**
- **Partner on the design, manufacturing, and testing**
- **Product availability for the life of the program**
- **Solutions for obsolescence and DMS**
- **On time delivery of high reliability products**



The information in this book has been carefully checked and is believed to be accurate; however, no responsibility is assumed for errors or omissions.

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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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## FEATURES

- Low reverse leakage
- Low forward voltage drop
- Hermetically sealed power surface mount package
- Hot case and isolated versions available
- Guard ring for overvoltage protection
- 175°C operating temperature
- Smaller footprint than TO-25X package
- Weight: 0.65 g typ (hot case), 0.95 g typ (isolated)
- TX, TXV, and S level screening available

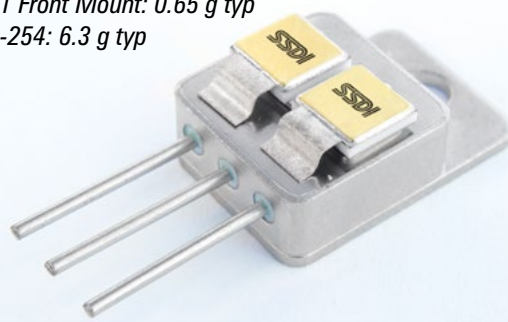
At a time where it is commonplace to outsource packaging, SSDI's experienced team of engineers and manufacturing technicians continue to offer new and modified packaging options to best meet the needs of our customers' high reliability programs. Since SSDI first introduced its Sedpack line of Schottky rectifiers, engineers working on military and space flight applications have especially taken advantage of these lightweight, low profile devices.

SSDI has combined two Sedpack 1 devices to develop a centertap Schottky rectifier with the same benefits of the Sedpack package. These centertap Schottkys are hermetically sealed, surface mountable, and lightweight especially when compared to TO-25X packages. The guard ring also contributes to the rugged construction of the overall package.

This new line of centertap Schottky rectifiers currently offers an output current range of 20 to 90 amps. This product family also includes voltage ratings up to 300 volts as SSDI's recently released SED20HB300 series has achieved the highest voltage rating available for hermetic silicon Schottky rectifiers. With regard to electrical performance, these centertap Schottky rectifiers can replace TO-25X type devices while significantly increasing space and weight savings.

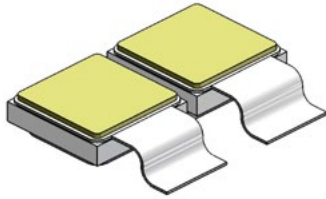
Hot case and isolated versions are available with more electrical ratings and outlines on the following pages. **As production is currently in progress, contact the factory at (562) 404-4474 to request samples.**

*Smaller footprint than TO-254*  
*CT1 Front Mount: 0.65 g typ*  
*TO-254: 6.3 g typ*

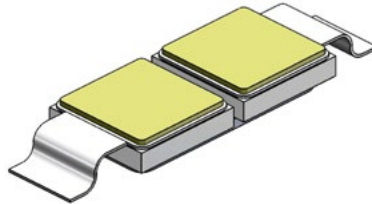


Part Number	$I_0$	$V_R$	$I_{FSM}$	$V_{F1} (typ)$ @ 25°C	@ $I_{F1}$	$V_{F2} (typ)$ @ 125°C	@ $I_{F2}$	$I_R (typ)$ @ 25°C	$R_{\theta JC}$	Data Sheet
	(A)	(V)	(A)	(V)	(A)	(V)	(A)	( $\mu A$ )	(°C/W)	
SED20HE200CT Series	20	200	100	0.85	20	0.76	20	0.7	2 (typ 1.6)	SH0102
SED40HE100CT Series	40	100 - 150	175	0.79	20	0.65	20	0.2	1.25	SH0101
SED40HE300CT Series	40	300	250	0.85	20	0.72	20	5	1.25	SH0099
SED40HE45CT Series	40	45	250	0.64	20	0.57	20	20	1.25	SH0107
SED40HE45LVCT Series	40	45	250	0.55	20	0.52	20	125	1.25	SH0104
SED90HE35CT Series	90	25 - 35	350	0.57	45	0.52	45	15 (@ 25 V) 25 (@ 35 V)	1.25	SH0106

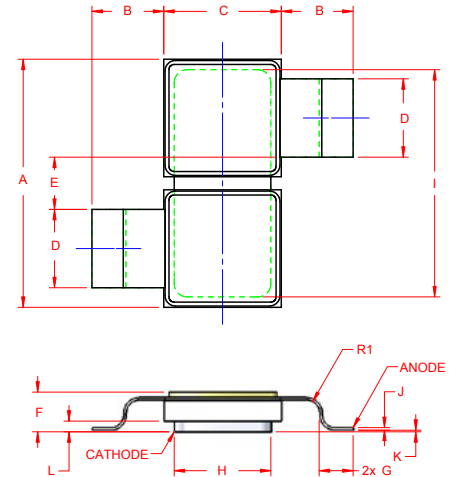
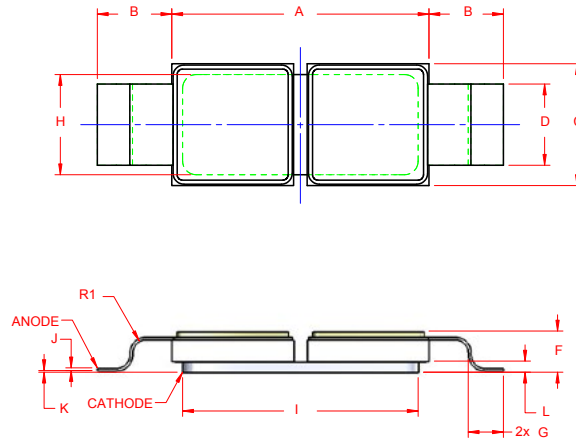
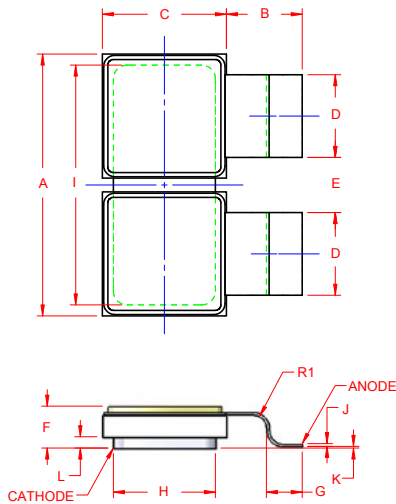
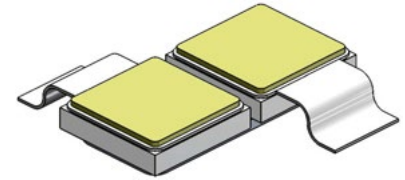
**Sedpack CT1  
Front Mount**



**Sedpack CT2  
Side Mount**



**Sedpack CT3  
Split Mount**

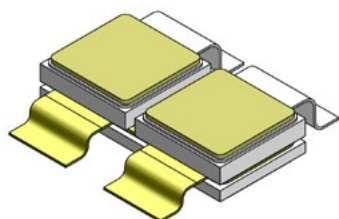


Configuration	Base	Leads
Common Cathode (CT)	Cathode	Anode

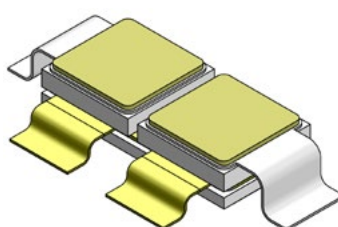
DIM	MIN	MAX
A	0.465	0.485
B	0.125	0.145
C	0.215	0.235
D	0.140	0.160
E	0.090	0.110
F	-	0.095
G	0.055	0.075
H	0.180	0.190
I	0.430	0.440
J	0.005	0.008
K	-0.002	0.008
R1	R 0.025 REF	

Part Number	$I_o$	$V_R$	$I_{FSM}$	$V_{F1}$ (typ) @ 25°C	@ $I_{F1}$	$V_{F2}$ (typ) @ 125°C	@ $I_{F2}$	$I_R$ (typ) @ 25°C	$R_{\theta JC}$	Data Sheet
	(A)	(V)	(A)	(V)	(A)	(V)	(A)	( $\mu$ A)	(°C/W)	
SED20HE200CT1i Series	20	200	100	0.85	20	0.76	20	0.7	2.3 (1.9 typ)	SH0105
SED40HE100CT1i Series	40	100 - 150	175	0.79	20	0.65	20	0.2	1.55	SH0103
SED40HE300CT1i Series	40	300	250	0.85	20	0.72	20	5	1.55	SH0100
SED40HE45CT1i Series	40	45	250	0.64	20	0.57	20	20	1.55	SH0110
SED40HE45LVCT1i Series	40	45	250	0.55	20	0.52	20	125	1.55	SH0108
SED90HE35CT1i Series	90	25 - 35	350	0.57	45	0.52	45	15 (@ 25 V) 25 (@ 35 V)	1.55	SH0109

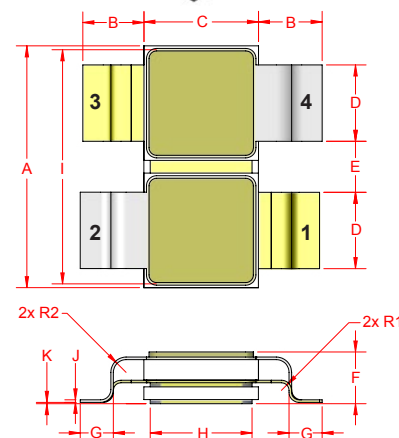
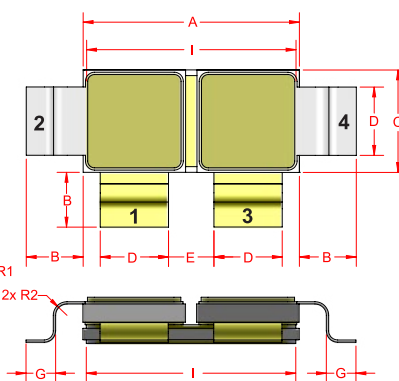
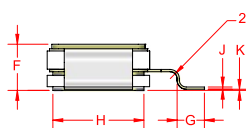
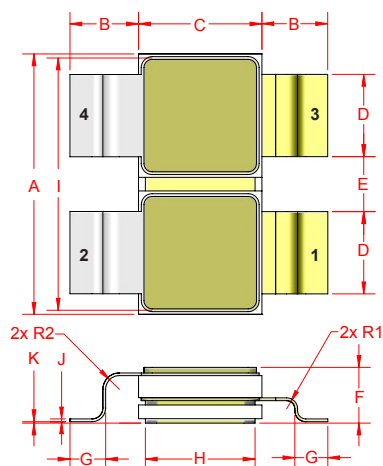
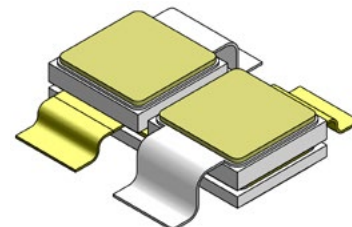
**Sedpack CT1i**  
Front Mount



**Sedpack CT2i**  
Side Mount



**Sedpack CT3i**  
Split Mount

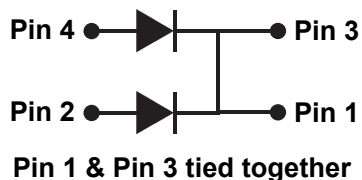


#### Physical Properties:

Body: Alumina

Lead: Copper, Ag plated with Ni under-plate

Bottom Isolation: AlN DBCu, Tin-Lead finish with Nickel under-plate

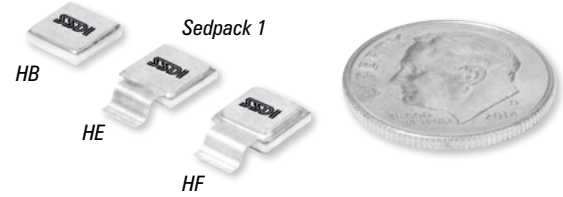


Configuration	Pin 1 & Pin 3 (tied together)	Pin 2	Pin 4
Common Cathode (CT)	Cathode	Anode	Anode

DIM	MIN	MAX
A	0.465	0.560
B	0.125	0.145
C	0.200	0.235
D	0.140	0.160
E	0.090	0.110
F	-	0.135
G	0.055	0.075
H	0.200	0.210
I (bottom Cu pad)	0.450	0.460
J	0.005	0.008
K	-0.002	0.008
R1	R 0.015 REF	
R2	R 0.025 REF	

## SED20HB300, SED20HE300, & SED20HF300

Maximum Ratings	Symbol	Value	Units
<b>Peak Repetitive Reverse Voltage and DC Blocking Voltage</b>	$V_{RRM}$ $V_{RWM}$ $V_R$	300	Volts
<b>Average Rectified Forward Current</b> (Resistive load, 60 Hz, sine wave, $T_A = 100^\circ\text{C}$ )	$I_O$	20	Amps
<b>Peak Surge Current</b> (8.3 ms pulse, half sine wave, 1 pulse, $T_A = 25^\circ\text{C}$ )	$I_{FSM}$	250	Amps
<b>Operating and Storage Temperature</b>	$T_{OP}$ & $T_{STG}$	-55 to +175	$^\circ\text{C}$
<b>Maximum Thermal Resistance</b> (Junction to Case)	HB HE HF $R_{\Theta JC}$	1.25 1.25 3.00	$^\circ\text{C/W}$



### FEATURES

- Low reverse leakage
- Low forward voltage drop
- Guard ring for overvoltage protection
- Eutectic die attach
- 175 $^\circ\text{C}$  operating temperature
- Weight: 0.3 g (typical)
- TX, TXV, and S level screening available

Electrical Characteristics	Symbol	Typical	Maximum	Units
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 5\text{ A}$ , 300 - 500 $\mu\text{sec}$ pulse)	$T_A = -55^\circ\text{C}$ $T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$ $V_{F1}$ $V_{F2}$ $V_{F3}$	0.90 0.74 0.58	- 0.80 0.65	V
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 10\text{ A}$ , 300 - 500 $\mu\text{sec}$ pulse)	$T_A = -55^\circ\text{C}$ $T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$ $V_{F4}$ $V_{F5}$ $V_{F6}$	0.97 0.79 0.64	- 0.85 0.72	V
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 20\text{ A}$ , 300 - 500 $\mu\text{sec}$ pulse)	$T_A = -55^\circ\text{C}$ $T_A = 25^\circ\text{C}$ $T_A = 125^\circ\text{C}$ $V_{F7}$ $V_{F8}$ $V_{F9}$	1.06 0.85 0.72	- 0.92 0.80	V
<b>Reverse Leakage Current</b> (Rated $V_R$ , 300 $\mu\text{sec}$ pulse minimum)	$T_A = 25^\circ\text{C}$ $T_A = 100^\circ\text{C}$ $T_A = 125^\circ\text{C}$ $I_{R1}$ $I_{R2}$ $I_{R3}$	5 200 0.6	50 - 5	$\mu\text{A}$ $\mu\text{A}$ mA
<b>Junction Capacitance</b> ( $T_A = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ )	$V_R = 5\text{ V}$ $V_R = 10\text{ V}$ $C_{J1}$ $C_{J2}$	250 185	350 -	pF

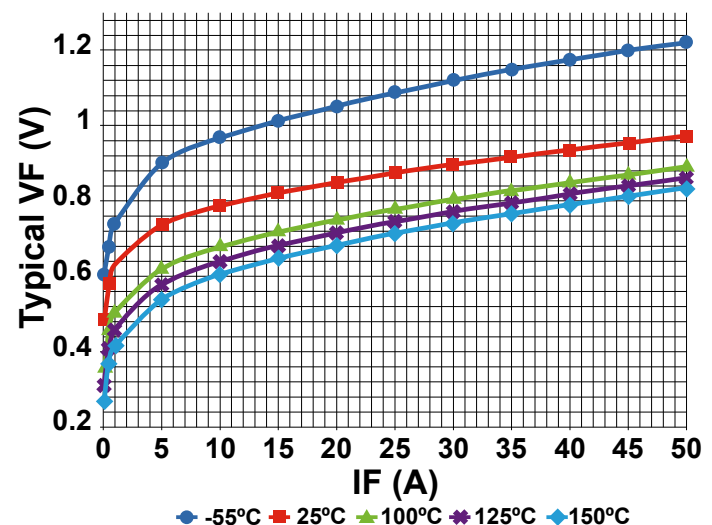
### SSDI Sedpack Product Line

- Output current up to 150 A
- Low profile: .095" maximum
- Fatigue resistant design
- Low thermal resistance
- High temperature construction (> 280 $^\circ\text{C}$ )
- Pre-cap inspectable
- Brazed package construction
- Pre-tinned for surface mount applications
- Low inductance design is ideal for high frequency applications

### Examples of Programs / Applications Utilizing the SSDI Sedpack Product Line

- AEHF
- P982
- ARGON
- ATLAS V
- MACH II
- ORION
- B2
- ICON

### SED20HB/HE/HF300





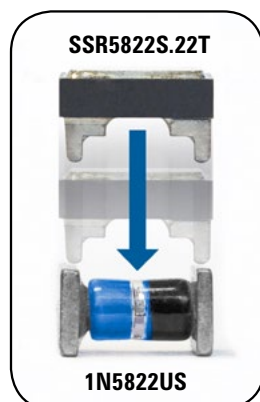
## SSDI's New Package Design Delivers Solution for Durability Concerns and Supply Issues with the 1N5822US

Solid State Devices, Inc. (SSDI) is known for its ability to provide unique solutions to overcome issues related to electrical performance, mechanical specifications, reliability, obsolescence, and part availability. When a customer recently approached SSDI



regarding their difficulty procuring the 1N5822US Schottky rectifier from other suppliers, SSDI engineers developed an alternative device to meet the needed electrical and mechanical specifications. Since the glass compression construction of the 1N5822US holds its die in place, a crack in the glass could cause a break in the solder contact or produce a short. The metallurgically bonded SSR5822S.22 alleviates these concerns and can be screened to specifically endure the stresses of the most demanding military and space applications.

### DROP-IN REPLACEMENT



Though the smaller, standard SMD.22 package can offer the same electrical performance, the customer desired a package with tabs that would serve as a direct "drop-in" replacement for the surface mount square tab package currently used in their design. While more and more suppliers are no longer manufacturing their own packaging, SSDI continues to offer package design, tooling, and testing capabilities to ensure that its modified or custom packaging options meet the customer's critical electrical and mechanical specifications. In the case of the SSR5822S.22T, the device not only matched the mechanical specifications of the 1N5822US, but also offered electrical improvements such as higher peak surge current and higher maximum operating / storage temperature ratings. TX, TXV, and S level screening are available. Screening is based on MIL-PRF-19500 with screening flows available upon request.

### FEATURES

- Drop-in replacement for 1N5822US
- Metallurgically bonded for increased ruggedness over glass compression construction
- Ideal for ultra high reliability applications

### THE NEXT STEP

With a tiny footprint of .157" x .227", SSDI engineers are developing new products in the SMD.22T package. An 8 amp device, which translates into a higher efficiency version with lower  $V_F$  ratings, as well as higher voltage versions up to 300 volts are currently being developed.

### SUSTAINMENT SUPPORT

While other suppliers run out of stock and delay new production activity for a particular product until demand has reached a certain level, SSDI can accommodate small volume orders. If not already archived among the over 10 million die in its expansive die bank, SSDI also purchases end of life die with full traceability so that parts can be supplied for the life of the program.

**FOR SAMPLES, QUOTES, OR TO DISCUSS HOW SSDI CAN MEET YOUR SPECIFIC PRODUCT NEEDS, CONTACT US TODAY:**

(562) 404-4474 • [www.ssd-power.com](http://www.ssd-power.com) • [ssdi@ssdi-power.com](mailto:ssdi@ssdi-power.com)

Max Rating	SSR5822S.22T	1N5822US
$I_O$	3 A	3 A
$V_R$	40 V	40 V
$I_{FSM}$	100 A	80 A
$T_J$	-65 to +150°C	-65 to +125°C
$T_{STG}$	-65 to +175°C	-65 to +150°C
$R_{\theta JE}$	10°C/W	10°C/W
$V_F$	400 mV @ 1 A 500 mV @ 3 A 700 mV @ 9.4 A	400 mV @ 1 A 500 mV @ 3 A 700 mV @ 9.4 A
$I_R$	0.10 mA @ 25°C 12.5 mA @ 100°C	0.10 mA @ 25°C 12.5 mA @ 100°C

# Sales Representatives

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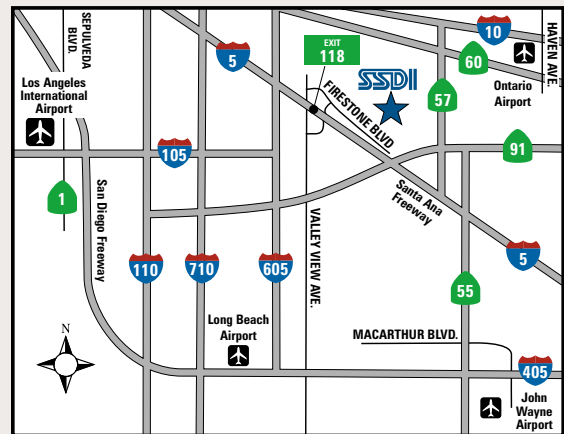
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## Map & Directions to SSDI

14701 Firestone Blvd. La Mirada, CA 90638



### Directions from Los Angeles International Airport (LAX):

- Start by going East on World Way, then merge onto South Sepulveda Blvd.
- Drive 0.7 miles, (At Tunnel Exit) then take Imperial Highway West/I-105 East ramp (toward International Terminal). Merge onto I-105 Freeway toward Norwalk.
- Drive 16.9 miles, then take I-605 Freeway North.
- Drive 1.7 miles, then merge onto I-5 Freeway South toward Santa Ana.
- Drive 6 miles, then take Exit #118 - Valley View Ave.
- Turn right at signal onto Valley View Ave.
- (Ignore the fact that this exit road is named Firestone Blvd, This is not the correct Firestone Blvd)*
- Go over bridge and turn right at the first signal- Firestone Blvd.
- Merge into left lane. *(Right lane becomes an entry back onto freeway)*
- Drive 0.7 miles to our facility at 14701 Firestone Blvd.

### Directions from John Wayne (Orange County) Airport (SNA):

- Begin by taking Airport Way Northeast toward MacArthur Blvd.
- Turn Left onto MacArthur Blvd.
- Drive 0.4 miles and merge onto I-405 Freeway North toward Long Beach.
- Take the first exit onto Route 55 Freeway North (exit 9A) toward Riverside.
- Drive 4.2 miles then exit at I-5 Freeway North (exit 10B) toward Los Angeles.
- Drive 15 miles then take the Valley View (Exit #118) exit.
- Turn right at the first signal (at off-ramp) onto Firestone Blvd.
- Drive 0.7 miles to our facility at 14701 Firestone Blvd.



JANS Certified MFR | AS9100 & ISO 9001 Registered  
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