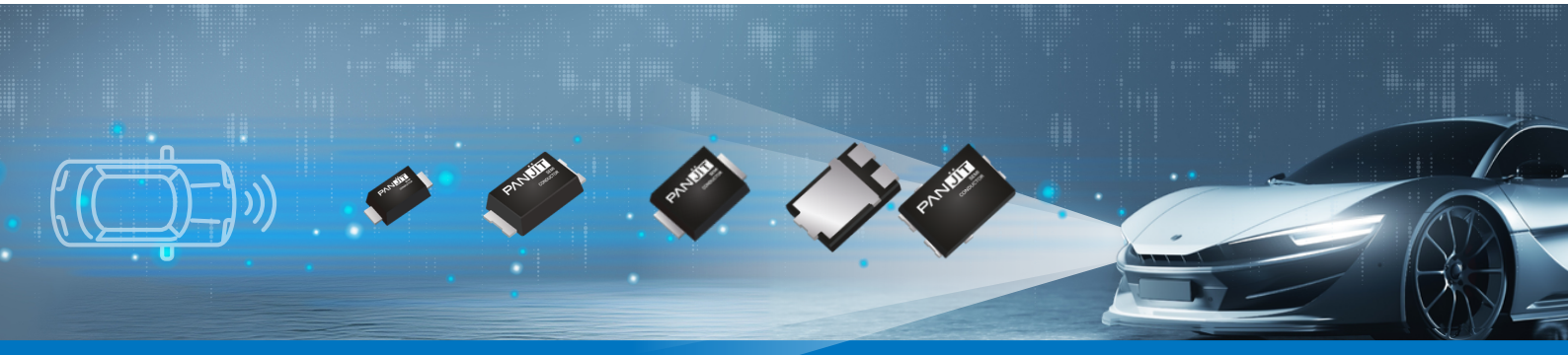


Automotive-Grade Bidirectional TVS

Powerful and Reliable Protection for High-Performance Systems



With the continuous evolution of smart vehicles, electronic and electrical architectures have become more complex, and onboard components are now required to withstand greater levels of electromagnetic interference (EMI) and transient overvoltage events such as electrostatic discharge, electrical fast transients, and surge. PANJIT offers a comprehensive range of AEC-Q101 qualified bidirectional TVS diodes in ultra-thin packages, designed to operate reliably at junction temperatures up to 175 °C. Our portfolio includes multiple power ratings, including 200 W, 400 W, 600 W, and 1500 W, delivering robust protection to ensure the stable performance of automotive electronic systems under the most demanding conditions.

► Key Features

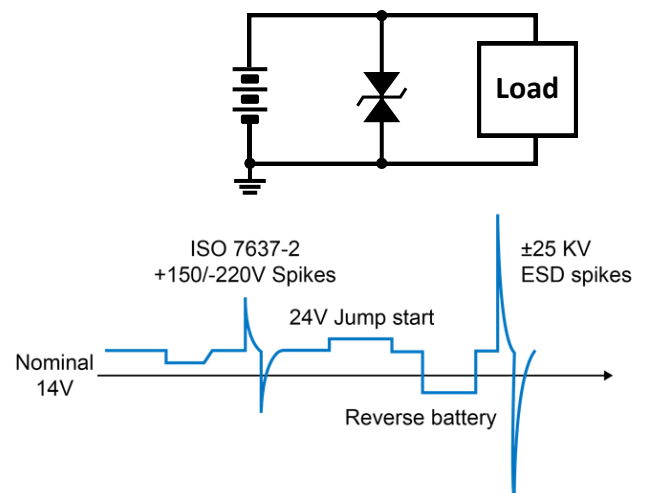
- AEC-Q101 Qualified
- High Reliability: $T_J = 175^{\circ}\text{C}$
- Low Clamping Voltage: Minimizes component stress
- Fast Response Time: Nanosecond-level transient protection
- Wide Voltage Range: Suitable for 12/ 24/ 48 V automotive systems
- Various Compact Packages: SOD-123FL, SMAF-C, SMBF, TO-277C, etc.
- ISO 10605 ($C=330\text{ pF}$, $R=330\ \Omega$): $\pm 30\text{ kV}$ Air, $\pm 30\text{ kV}$ Contact
- ISO 7637-2:
 - Pulse 1: $V_s = -150\text{ V}$ - Pulse 2a: $V_s = +112\text{ V}$
 - Pulse 3a: $V_s = -220\text{ V}$ - Pulse 3b: $V_s = +150\text{ V}$

► ISO 7637-2 2011(E)

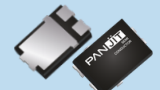
Test Pulse	12 V System		24 V System		Min. number of pulses or test time
	Test pulse severity level $U_s(V)$		Test pulse severity level $U_s(V)$		
	IV	III	IV	III	
1	-150	-112	-600	-450	500 pulses
2a	+112	+55	+112	+55	500 pulses
2b	+10	+10	+20	+20	10 pulses
3a	-220	-165	-300	-220	1 hour
3b	+150	+112	+300	+220	1 hour

► Target Applications

- Body Control Module
- ADAS
- LED Lighting
- Infotainment
- ECU Subsystems
- Automotive Air Conditioning



► Products

P _{PP}	Direction	V _{RWM}	T _J	SOD123-FL	SMAF-C	SMBF	TO-277C
W	UNI/BI	V	°C				
200	BI	8.5-85	175	P2HALxxCA-AU			
400	BI	8.5-85	175		P4HAFcxxCA-AU		
600	BI	8.5-85	175			P6HBFxxCA-AU	
1500	BI	8.5-85	175				1K5HPCxxCA-AU

► Recommendations for Power Systems

• 12 V Power System

Part Number	Direction	P _{PP}	V _{RWM}	V _{BR} (V)		I _T	V _{C@I_{PP}} Max.	I _{PPM}	I _{R@V_{RWM}}
		W	V	Min.	Max.	mA	V	A	uA
P2HAL22CA-AU	BI	200	22	24.4	26.9	1	35.5	5.6	1
P2HAL24CA-AU	BI	200	24	26.7	29.5	1	38.9	5.1	1
P4HAFc22CA-AU	BI	400	22	24.4	26.9	1	35.5	11.2	1
P4HAFc24CA-AU	BI	400	24	26.7	29.5	1	38.9	10.3	1
P6HBF22CA-AU	BI	600	22	24.4	26.9	1	35.5	16.9	1
P6HBF24CA-AU	BI	600	24	26.7	29.5	1	38.9	15.4	1
1K5HPC22CA-AU	BI	1500	22	24.4	26.9	1	35.5	42.3	1
1K5HPC24CA-AU	BI	1500	24	26.7	29.5	1	38.9	38.6	1

• 24 V Power System

Part Number	Direction	P _{PP}	V _{RWM}	V _{BR} (V)		I _T	V _{C@I_{PP}} Max.	I _{PPM}	I _{R@V_{RWM}}
		W	V	Min.	Max.	mA	V	A	uA
P2HAL33CA-AU	BI	200	33	33.3	36.8	1	48.4	4.1	1
P2HAL36CA-AU	BI	200	36	36.7	40.6	1	53.3	3.8	1
P4HAFc33CA-AU	BI	400	33	33.3	36.8	1	48.4	8.3	1
P4HAFc36CA-AU	BI	400	36	36.7	40.6	1	53.3	7.5	1
P6HBF33CA-AU	BI	600	33	33.3	36.8	1	48.4	11.3	1
P6HBF36CA-AU	BI	600	36	36.7	40.6	1	53.3	10.3	1
1K5HPC33CA-AU	BI	1500	33	33.3	36.8	1	48.4	28.1	1
1K5HPC36CA-AU	BI	1500	36	36.7	40.6	1	53.3	25.8	1

• 48 V Power System

Part Number	Direction	P _{PP}	V _{RWM}	V _{BR} (V)		I _T	V _{C@I_{PP}} Max.	I _{PPM}	I _{R@V_{RWM}}
		W	V	Min.	Max.	mA	V	A	uA
P2HAL58CA-AU	BI	200	58	64.4	71.2	1	93.6	2.1	1
P2HAL60CA-AU	BI	200	60	66.7	73.7	1	96.8	1.8	1
P4HAFc58CA-AU	BI	400	58	64.4	71.2	1	93.6	4.3	1
P4HAFc60CA-AU	BI	400	60	66.7	73.7	1	96.8	3.9	1
P6HBF58CA-AU	BI	600	58	64.4	71.2	1	93.6	6.4	1
P6HBF60CA-AU	BI	600	60	66.7	73.7	1	96.8	6.2	1
1K5HPC58CA-AU	BI	1500	58	64.4	71.2	1	93.6	16	1
1K5HPC60CA-AU	BI	1500	60	66.7	73.7	1	96.8	15.5	1