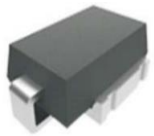
Comchip
SMD Diodes Specialist

AEC-Q101

Load Dump Protection TVS

ISO16750-2 / ISO7637-2

3600W /4600W/6600W(DO-218)



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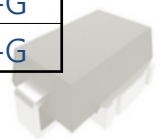
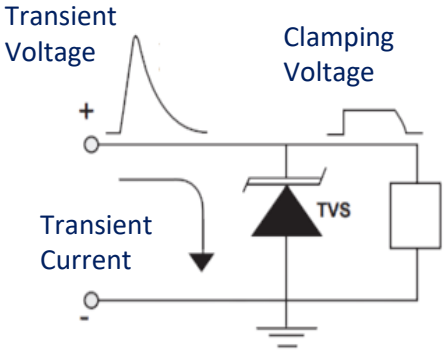
DO-218 TVS Family

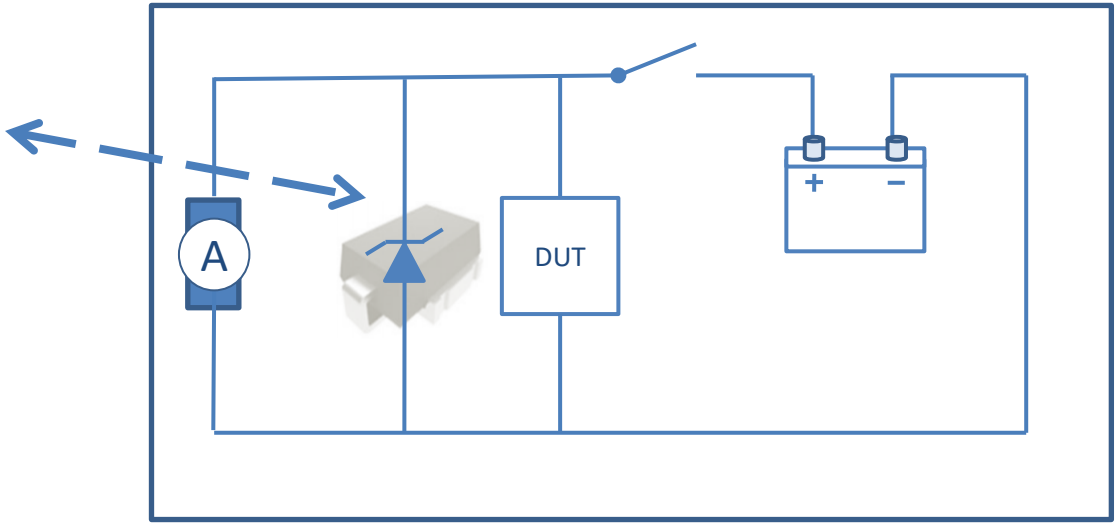
VRWM(V)	IR(uA)@VR	VB(V)@IT=5mA	3600W	4600W	6600W
10	10	11.10~12.30		ATV46SM610A-G	ATV66SM810(C)A-G
11		12.20~13.50		ATV46SM611A-G	ATV66SM811(C)A-G
12		13.30~14.70		ATV46SM612A-G	ATV66SM812(C)A-G
13		14.40~15.90		ATV46SM613A-G	ATV66SM813(C)A-G
14		15.60~17.20	ATV36SM514A-G	ATV46SM614A-G	ATV66SM814(C)A-G
15		16.70~18.50	ATV36SM515A-G	ATV46SM615A-G	ATV66SM815(C)A-G
16		17.80~19.70	ATV36SM516A-G	ATV46SM616A-G	ATV66SM816(C)A-G
17		18.9~20.90	ATV36SM517A-G	ATV46SM617A-G	ATV66SM817(C)A-G
18		20.00~22.10	ATV36SM518A-G	ATV46SM618A-G	ATV66SM818(C)A-G
20		22.20~24.50	ATV36SM520A-G	ATV46SM620A-G	ATV66SM820(C)A-G
22		24.40~26.90	ATV36SM522A-G	ATV46SM622A-G	ATV66SM822(C)A-G
24		26.70~29.50	ATV36SM524A-G	ATV46SM624A-G	ATV66SM824(C)A-G
26		28.90~31.90	ATV36SM526A-G	ATV46SM626A-G	ATV66SM826(C)A-G
28		31.10~34.40	ATV36SM528A-G	ATV46SM628A-G	ATV66SM828(C)A-G
30		33.30~36.80	ATV36SM530A-G	ATV46SM630A-G	ATV66SM830(C)A-G
33		36.70~40.60	ATV36SM533A-G	ATV46SM633A-G	ATV66SM833(C)A-G
36		40.00~44.20	ATV36SM536A-G	ATV46SM636A-G	ATV66SM836(C)A-G
40		44.40~19.10		ATV46SM640A-G	ATV66SM840(C)A-G
43		47.80~52.80		ATV46SM643A-G	ATV66SM843(C)A-G



Introduction

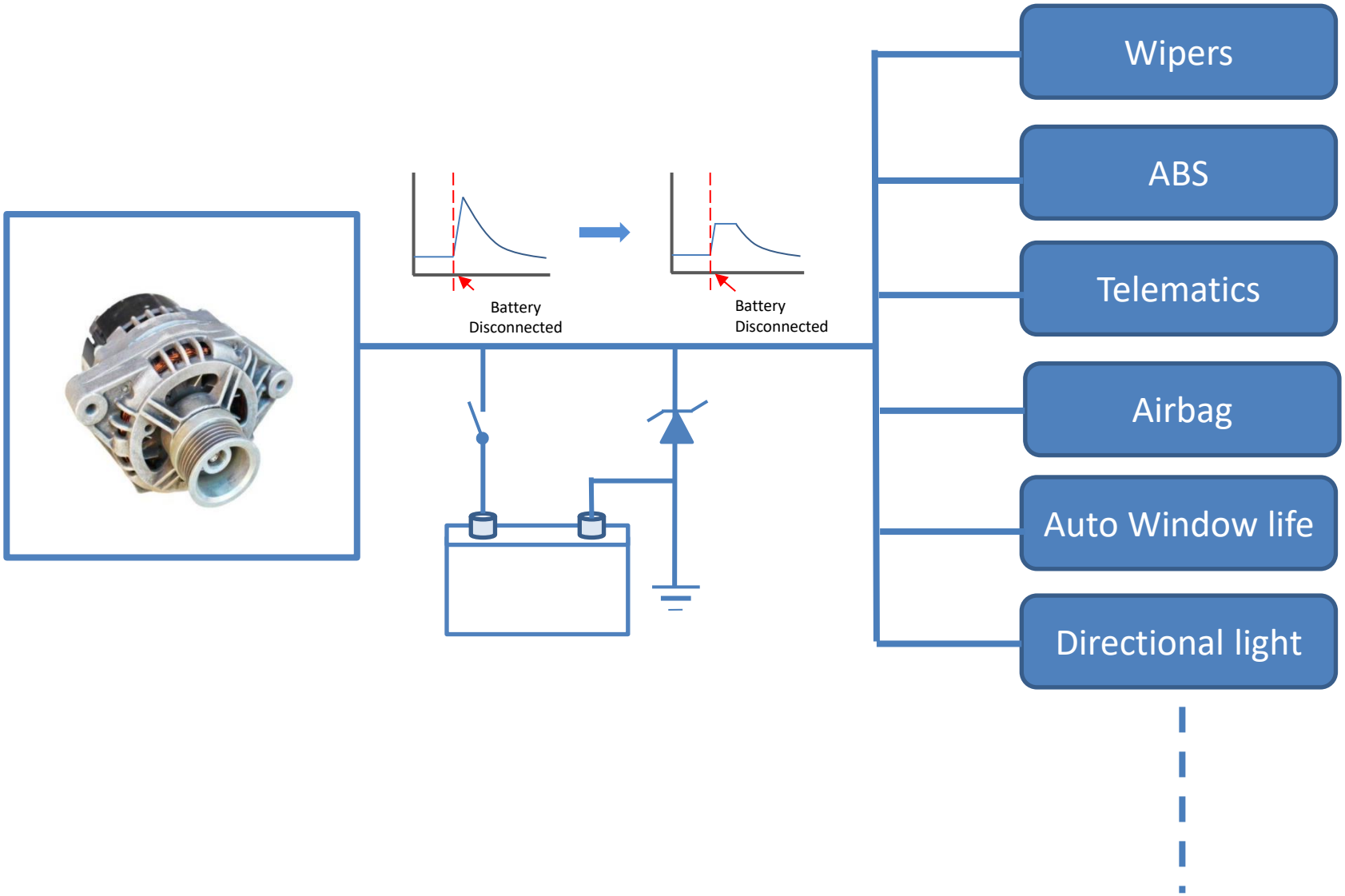
The electrical components of automotive application keep increase precision, it cause the components get less surge protection capability. Therefore, the requirement of protection parts are increasing a lot. The load dump protection TVS is the best choice. It can handle the surge identified by ISO 7637-2 pulse 5a and ISO 16750-2 pulse 5a. It specifies the stringent conditions to test products in order to improve the protection of automotive systems.





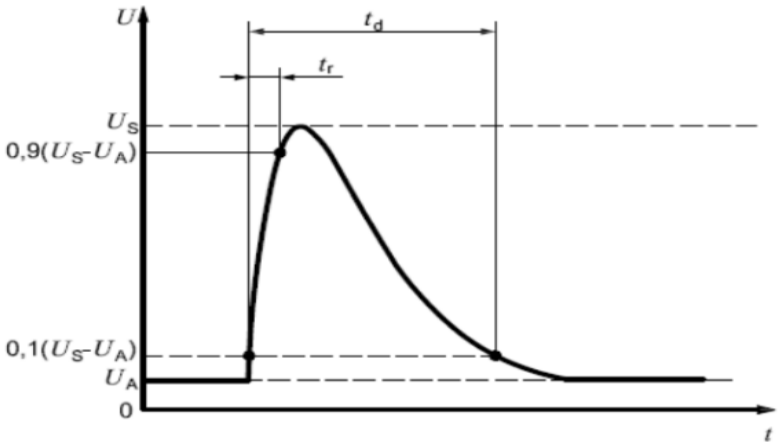
Load dump TVS is mainly protects the circuit by clamping down the surge voltage which is generated by the generator during load dump mode.

Application diagram



Load Dump Test

Load Dump Test				
	12V System		24V System	
Specification	ISO7637-2 5a	ISO16750-2 5a	ISO7637-2 5a	ISO16750-2 5a
U_S(V)	65 ≤ Us ≤ 87	79 ≤ Us ≤ 101	123 ≤ Us ≤ 174	151 ≤ Us ≤ 202
U_a(V)	14		27	
Tr(ms)	10		10	
Td(ms)	40 ≤ Td ≤ 400		100 ≤ Td ≤ 350	
Ri(Ω)	0.5 ≤ Ri ≤ 4		1 ≤ Ri ≤ 8	
Pulse	1	10 interval 60s	1	10 interval 60s



Load Dump How to select

Load Dump TVS needs to keep the surge impact and clamp the voltage, in order to protect and avoid the EUT damage.

Clamping Voltage

Maximum input voltage of voltage regulators:

- Linear Type: 37V to 40V
- DC-DC Converter IC: 40V to 60V

Part No.	Breakdown voltage V_{BR} @ I_T			Maximum Reverse Leakage @V_{RWM}	Maximum I_R@V_{RWM} T_J=175°C	Working Peak Reverse Voltage	Maximum Reverse Surge Current	Maximum Clamping Voltage @I_{PP}	Marking Code
	Min (V)	Max (V)	I_T (mA)	I_R (μA)	I_R (μA)	V_{RWM} (V)	I_{PP} (A) (1)	V_C (V)	
ATV66SM810A-G	11.10	12.30	5	15	250	10	388.0	17.0	10A
ATV66SM811A-G	12.20	13.50	5	10	150	11	363.0	18.2	11A
ATV66SM812A-G	13.30	14.70	5	10	150	12	332.0	19.9	12A
ATV66SM813A-G	14.40	15.90	5	10	150	13	307.0	21.5	13A

Stand-Off Voltage

The V_{RWM} is a critical parameter for device selection.

- V_{RWM}=22V~24V Load Dump TVS : Recommend for 12V system
- V_{RWM}=30V~36V Load Dump TVS : Recommend for 24V system: