

MIL-STD-188-125-1

TABLE I. Injected pulse characteristics and residual internal stress limits for classes of electrical POEs.

a. Electrical POEs, except RF antenna line POEs.

Class of Electrical POE	Pulsed Current Injection Requirements ¹			
	Type of Injection	Peak Short-Ckt Current (A)	Risetime (s)	FWHM ² (s)
Commercial Power Lines (Intersite)				
Short Pulse	Common mode	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	2,500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Intermediate Pulse	Common mode	250	$\leq 1.5 \times 10^{-6}$	$3 \times 10^{-3} - 5 \times 10^{-3}$
Intermediate Pulse	Wire-to-ground	250	$\leq 1.5 \times 10^{-6}$	$3 \times 10^{-3} - 5 \times 10^{-3}$
Long Pulse	Common mode	³ 1,000	≤ 0.2	³ 20-25
Long Pulse	Wire-to-ground	³ 1,000	≤ 0.2	³ 20-25
Other Power Lines (Intrasite)				
Unrestricted Lines				
Short Pulse	Common mode	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	2,500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Restricted Lines				
Short Pulse	Common mode	800	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	⁴ $800/\sqrt{N}$ or 500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Audio/Data Lines (Intersite)				
Short Pulse	Common mode	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	⁴ $5,000/\sqrt{N}$ or 500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Intermediate Pulse	Common mode	250	$\leq 1.5 \times 10^{-6}$	$3 \times 10^{-3} - 5 \times 10^{-3}$
Intermediate Pulse	Wire-to-ground	250	$\leq 1.5 \times 10^{-6}$	$3 \times 10^{-3} - 5 \times 10^{-3}$
Long Pulse	Common mode	³ 1,000	≤ 0.2	³ 20-25
Long Pulse	Wire-to-ground	³ 1,000	≤ 0.2	³ 20-25
Control/Signal Lines (Intrasite)				
Unrestricted Low-Voltage Lines ⁵				
Short Pulse	Common mode	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	⁴ $5,000/\sqrt{N}$ or 500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Unrestricted High-Voltage Lines ⁵				
Short Pulse	Common mode	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	⁴ $5,000/\sqrt{N}$ or 500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Restricted Lines				
Short Pulse	Common-mode	800	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Short Pulse	Wire-to-ground	⁴ $800/\sqrt{N}$ or 500	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Conduit Shields				
Signal and Low Current Power ⁶				
Buried ⁷	Conduit-to-gnd	800	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Nonburied	Conduit-to-gnd	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Medium Current Power ⁶				
Buried ⁷	Conduit-to-gnd	800	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Nonburied	Conduit-to-gnd	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
High Current Power ⁶				
Buried ⁷	Conduit-to-gnd	800	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$
Nonburied	Conduit-to-gnd	5,000	$\leq 2 \times 10^{-8}$	$5 \times 10^{-7} - 5.5 \times 10^{-7}$

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TABLE I. Injected pulse characteristics and residual internal stress limits for classes of electrical POEs - Continued.

a. Electrical POEs, except RF antenna line POEs (continued).

Class of Electrical POE	Residual Internal Stress Limits			
	Type of Measurement	Peak Response Current (A)	Peak Rate of Rise (A/s)	Root Action (A - \sqrt{s})
Commercial Power Lines (Intersite)				
Short Pulse	Bulk current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$
Short Pulse	Wire current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$
Intermediate Pulse	Bulk current	No damage or performance degradation		
Intermediate Pulse	Wire current	No damage or performance degradation		
Long Pulse	Bulk current	No damage or performance degradation		
Long Pulse	Wire current	No damage or performance degradation		
Other Power Lines (Intrasite)				
Short Pulse	Bulk current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$
Short Pulse	Wire current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$
Audio/Data Lines (Intersite)				
Short Pulse	Bulk current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
Short Pulse	Wire current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
Intermediate Pulse	Bulk current	No damage or performance degradation		
Intermediate Pulse	Wire current	No damage or performance degradation		
Long Pulse	Bulk current	No damage or performance degradation		
Long Pulse	Wire current	No damage or performance degradation		
Control/Signal Lines (Intrasite)				
Low-Voltage Lines ⁵				
Short Pulse	Bulk current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
Short Pulse	Wire current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
High-Voltage Lines ⁵				
Short Pulse	Bulk current	≤ 1.0	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-2}$
Short Pulse	Wire current	≤ 1.0	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-2}$
Conduit Shields				
Signal and Low Current Power ⁶				
Buried ⁷	Bulk current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
Nonburied	Bulk current	≤ 0.1	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-3}$
Medium Current Power ⁶				
Buried ⁷	Bulk current	≤ 1.0	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-2}$
Nonburied	Bulk current	≤ 1.0	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-2}$
High Current Power ⁶				
Buried ⁷	Bulk current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$
Nonburied	Bulk current	≤ 10	$\leq 1 \times 10^7$	$\leq 1.6 \times 10^{-1}$