Table 09 Transistor Screening Requirements

Inspection/Test	MIL-STD-750 Methods	MIL-STD-750 Conditions and Requirements	Grade 1	Grade 2
1. Internal Visual	2072 2070 2069	General - purpose transistors RF transistors Power FETs	X	X
2. Temperature Cycling	1051	Condition G (-55 °C to +150 °C) or max storage temperature whichever is less. No dwell is required at 25°C. 20 cycles, t (extreme) ≥ 10 minutes.	X	X
4. Constant Acceleration	2006	20,000 g's in Y_1 Direction except at 10,000 g's for devices with power rating ≥ 10 Watts @ T_c= 25 °C. Not required for metallurgically bonded diodes.	X	X
5. PIND	2052	Condition A. Not required for optical coupled isolators.	X	X (Note 1)
8. Serialization			X	X
9. Initial Electrical		Read and record delta parameters per Table 09A on next page	X	X
10. Burn-In	1039	Conditions A and B per Table 09A on next page. Duration (hours) for HTRB/ Power Burn-in	X 48/240	X 48/160
11. Final Electrical		See Table 09A	X	X
12. Calculate Delta		See Table 09A	X	X
13. Percent Defective Allowable		PDA applies to the DC measurements @ 25 °C and delta limits (when applicable).	5%	10%
14. Hermetic Seal a. Fine Leak b. Gross Leak	1071	 G or H C or K	X	X
15. Radiographic	2076		X	
16. External Visual	2071		X	X

Note:

1. When procured directly from the manufacturer, JANTXV/JANTX transistors should be procured with PIND testing per MIL-STD-19500, Paragraph 4.6.3.4.

Table 09A Burn-In and Electrical Measurement Requirements for Transistors

Transistor Type	Required Burn-in		Delta Parameters	Electrical Measurements (Notes 1,2, and 3)
	HTRB (Condition A)	Power (Condition B)		
Bipolar Transistors (Switching, Low/ High Power, Dual, General Purpose.)	80% rated V_{CBO} 125°C≤T_A≤150°C	Specify V_{CB} or V_{CE} to meet max P_T T_A = 25 °C	ΔI_{CBO} or ΔI_{CEO} Δh_{FE}	I_{CB}, I_{CEO}, I_{CBO}, I_{EBO}, $V_{(BR)CEO}$, $V_{(BR)CBO}$, $V_{(BR)EBO}$, $V_{(BR)CES}$, $V_{CE(SAT)}$, $V_{BE(SAT)}$, h_{FE}, t_{on}, t_{off}, t_s, t_f, h_{fe}, C_{obo}, C_{ibo}
Bipolar Transistors (RF, High-Frequency)	80% rated V_{CBO} 125°C≤T_A≤150°C	Specify V_{CB} to meet max P_T T_A = 25 °C	ΔI_{CEO} Δh_{FE}	I_{CEO}, $V_{(BR)CEO}$, $V_{(BR)CBO}$, $V_{(BR)EBO}$ $V_{CE(SAT)}$, h_{FE} G_{PE}, NF, h_{fe}, η, C_{obo}
Junction Field Effect (JFET)	80% rated V_{GS} V_{DS} = 0 125°C≤T_A≤150°C	80% rated V_{GS} Specify V_{DS} to meet max P_T T_A = 25 °C	ΔI_{DSS} or ΔI_{GSS} Δy_{fs}	$V_{DS(ON)}$, $V_{GS(OFF)}$, $V_{(BR)GSS}$, I_{GSS}, I_{DSS}, C_{iss}, C_{rss}, y_{fs}, y_{os}.
MOSFET	80% rated V_{DS} V_{GS}= 0V T_A= 125 °C	80% of rated V_{GS} V_{DS}= 0V T_A= 125 °C	ΔI_{DSS} or ΔI_{GSS} $\Delta V_{GS(TH)}$ $\Delta r_{ds\ (on)}$	$V_{(BR)DSS}$, $V_{GS(TH)}$, $V_{DS(ON)}$, V_{SD}, $r_{ds(on)}$, t_{on}, t_{off}, t_{rr}, C_T.
Darlington	80% rated V_{CBO} 125°C≤T_A≤150°C	Specify V_{CB} or V_{CE} to meet max P_T T_A = 25 °C	Δh_{FE} ΔI_{CE}	$V_{CE(SAT)}$), $V_{BE(SAT)}$, $V_{BE(TH)}$, $V_{(BR)CEO}$, I_{CEO}, I_{EBO}, I_{CE} h_{FE}, t_{on}, t_{off}, C_{obo}.
Optocoupler	I_F = 0 80% Rated V_{CBO} T_A = 125 °C	I_F = rated max Specify V_{CE} to meet max P_T T_A = 25 °C	Δh_{FE} $\Delta I_{C(OFF)}$ $\Delta I_{C(ON)}$	$V_{CE(SAT)}$, $V_{(BR)CEO}$, V_F $I_{C(OFF)}$, $I_{C(ON)}$, I_R, h_{FE}, t_r, t_f, C_{obo}.

Notes:

1. See MIL-S-19500, Appendix B for symbol definitions.
2. Recommended electrical parameters are specified. Since electrical parameters are device dependent, the conditions and limits pertaining to a device type shall be specified in a detail specification.
3. All DC parameters shall be tested at 25°C, at minimum operating temperature and at maximum operating temperature. All AC parametric measurements shall be made at the required 25°C.