ESCC Detail Specification No. 5513/017
DCR: Capacitance Max. Specification

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Motivation for DCR and impact

- In 2025 Infineon changed its package supplier for **T-packages.** The **new supplier** was released for all part types based on the full Chart F4 qualification of a BAS70-T1(ES) lot and similarity– see Report 2231LR10

- However, the package from the new supplier introduces a small **offset** for the total capacitance ~ 0.035 pF.
- The Schottky diodes, BAS40 and BAS70 have capacitances in the order of 1-2 pF, therefore the offset is negligible.
- The HV PiN diodes, BXY43 and BXY44, have enough margin to specification limit – 50-80%, therefore the offset shifts the capacitance well within the specification limits.
- The PiN Diode BXY42 has a very low margin (~10%) to the upper spec limit and the offset shifts the capacitance over the maximum specification limit which leads to unacceptable **yield loss**

- We need to **include the offset** into the specification limit and **increase the margin** in order to avoid further yield losses. We propose an increase of the max. spec limit with **+0.06 pF** for all variants of BXY42

- Until now, no parts with the new T-package have been delivered, but there is already a delivery in planing.

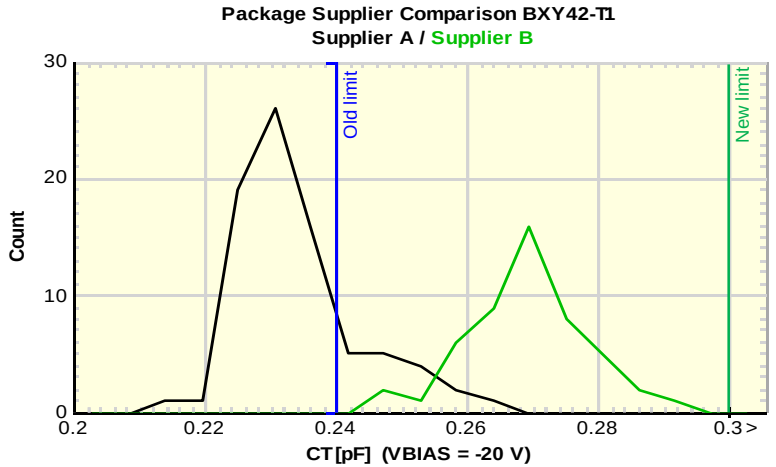
Electrical Measurements

Comparison of empty packages

– 2 empty packages per supplier -> increase from 70fF to 105fF

Supplier	Serial #	C @ 150mV [pF]	C @ 1V [pF]
A – old	#1	0.07	0.072
	#2	0.068	0.065
B - new	#1	0.10	0.103
	#2	0.108	0.11
		(different LCR meter oscillator voltages)	

Comparison BXY42-T1 in both packages



Change needed

- ESCC Detail Specification No. **5513/017** Issue 7, Oct. 2020
- Para. 2.5.1 Room Temperature Electrical Measurements
- Total Capacitance, C_T Max Limit:
  - Variants 01,02: from 0.24 to **0.30** pF
  - Variant 03: from 0.29 to **0.35** pF

2.5.1 Room Temperature Electrical Measurements

The measurements shall be performed at T_{amb} = +25 ±3°C.

Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
				Min	Max	
Reverse Current 1	I_{R1}	4016	V_R = -50V	-	10	µA
Reverse Current 2	I_{R2}	4016	V_R = -40V	-	5	nA
Forward Voltage	V_F	4011	I_F = 100mA	-	1.1	V
Total Capacitance	C_T	4001	V_R = -20V, f = 1MHz Variants 01, 02 Variant 03	 - -	 0.24 0.29	pF
Forward Resistance 1	R_{F1}	4056	f = 100MHz, I_{F1} = 1mA	-	3.5	Ω
Forward Resistance 2	R_{F2}	4056	f = 100MHz, I_{F2} = 10mA	-	2.5	Ω
Minority Carrier Lifetime	τ_L	-	I_F = 10mA, I_R = -6mA Note 1	35	-	ns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