



PXN014-60QLA

N-channel 60 V, 14 mOhm, logic level Trench MOSFET in MLPAK33

12 December 2024

Product data sheet

1. General description

General purpose MOSFET for standard applications, 39 A, logic level, N-channel enhancement mode Power MOSFET in MLPAK33 package.

2. Features and benefits

- Logic level compatibility
- Trench MOSFET technology
- Thermally efficient package in a small form factor (3.3 mm x 3.3 mm footprint)

3. Applications

- Secondary side synchronous rectification
- DC-to-DC converters
- Home appliance
- Motor drive
- Load switching
- LED lighting

4. Quick reference data

Table 1. Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V _{DS}	drain-source voltage	25 °C ≤ T _j ≤ 150 °C		-	-	60	V
I _D	drain current	V _{GS} = 10 V; T _{mb} = 25 °C; Fig. 2		-	-	39	A
P _{tot}	total power dissipation	T _{mb} = 25 °C; Fig. 1		-	-	43	W
T _j	junction temperature			-55	-	150	°C
Static characteristics							
R _{DSon}	drain-source on-state resistance	V _{GS} = 10 V; I _D = 10 A; T _j = 25 °C; #unique_6/unique_6_Connect_42_idaaa-039627		-	11	14	mΩ
		V _{GS} = 4.5 V; I _D = 5 A; T _j = 25 °C; #unique_6/unique_6_Connect_42_idaaa-039627		-	15	19.6	mΩ
Dynamic characteristics							
Q _{GD}	gate-drain charge	I _D = 10 A; V _{DS} = 30 V; V _{GS} = 4.5 V; T _j = 25 °C; #unique_6/unique_6_Connect_42_idaaa-039629 ;		-	2.1	-	nC
Q _{G(tot)}	total gate charge	#unique_6/unique_6_Connect_42_id003aaa508		-	5.9	-	nC

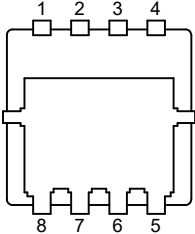
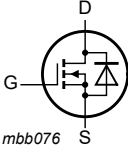
N-channel 60 V, 14 mOhm, logic level Trench MOSFET in MLPAK33

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Avalanche ruggedness							
$E_{DS(AL)S}$	non-repetitive drain-source avalanche energy	$I_D = 15\text{ A}$; $V_{sup} \leq 60\text{ V}$; $V_{GS} = 10\text{ V}$; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$; unclamped	[1]	-	-	22.5	mJ
Source-drain diode							
Q_r	recovered charge	$I_S = 5\text{ A}$; $dI_S/dt = -100\text{ A}/\mu\text{s}$; $V_{GS} = 0\text{ V}$; $V_{DS} = 30\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$; #unique_6/unique_6_Connect_42_id003aal160	[2]	-	4.9	-	nC

- [1] Protected by 100% test
[2] includes capacitive recovery

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	S	source	 MLPAK33 (SOT8002-1)	 mbb076
2	S	source		
3	S	source		
4	G	gate		
5	D	drain		
6	D	drain		
7	D	drain		
8	D	drain		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PXN014-60QLA	MLPAK33	plastic thermal enhanced surface mounted package; mini leads; 8 terminals; pitch 0.65 mm; 3.3 x 3.3 x 0.8 mm body	SOT8002-1

7. Marking

Table 4. Marking codes

Type number	Marking code
PXN014-60QLA	6AL

8. Limiting values

Table 5. Limiting values

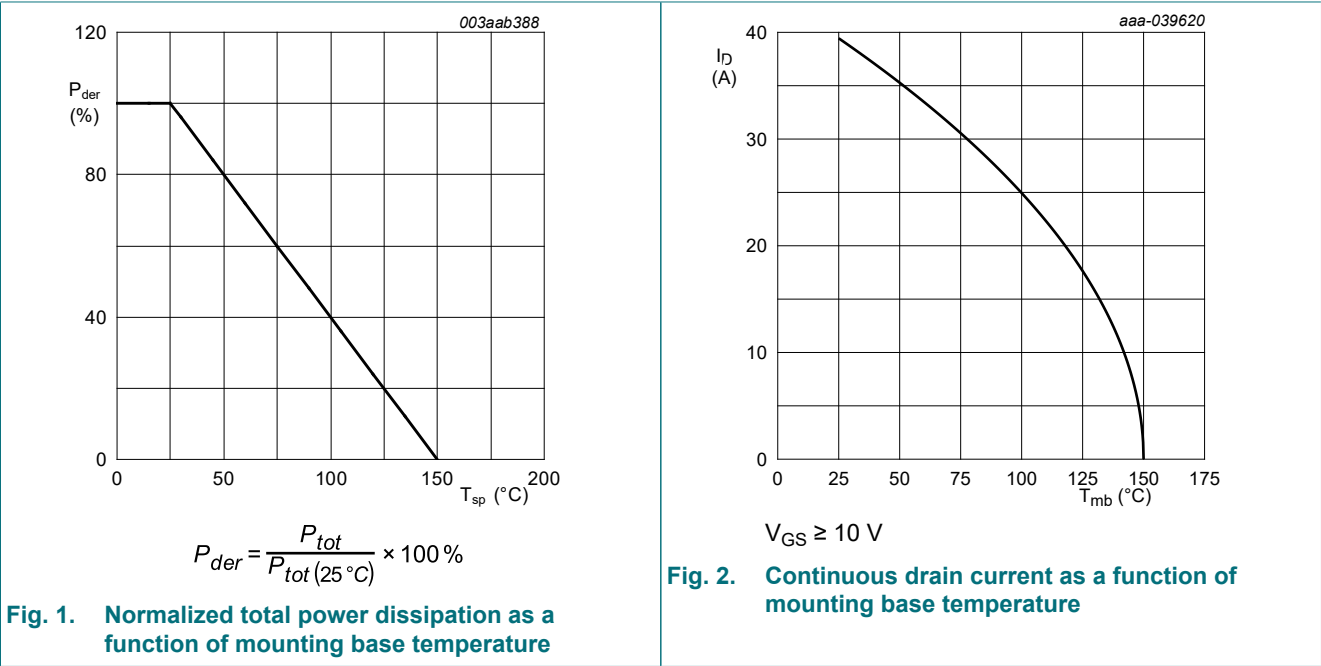
In accordance with the Absolute Maximum Rating System (IEC 60134). $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated.

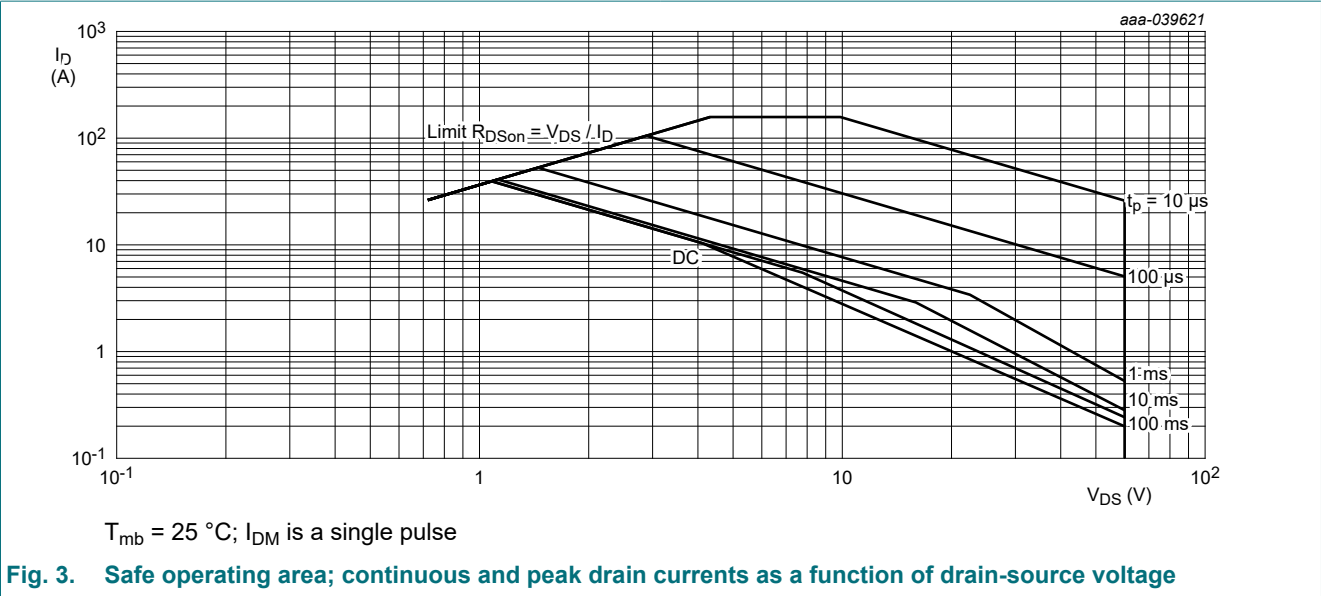
Symbol	Parameter	Conditions		Min	Max	Unit
V_{DS}	drain-source voltage	$25\text{ }^{\circ}\text{C} \leq T_j \leq 150\text{ }^{\circ}\text{C}$		-	60	V
V_{GS}	gate-source voltage			-20	20	V
P_{tot}	total power dissipation	$T_{mb} = 25\text{ }^{\circ}\text{C}$; Fig. 1		-	43	W

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Symbol	Parameter	Conditions		Min	Max	Unit
I _D	drain current	V _{GS} = 10 V; T _{mb} = 25 °C; Fig. 2		-	39	A
		V _{GS} = 10 V; T _{mb} = 100 °C; Fig. 2		-	25	A
I _{DM}	peak drain current	pulsed; t _p ≤ 10 µs; T _{mb} = 25 °C; Fig. 3		-	158	A
T _{stg}	storage temperature			-55	150	°C
T _j	junction temperature			-55	150	°C
T _{sld(M)}	peak soldering temperature			-	260	°C
Source-drain diode						
I _S	source current	T _{mb} = 25 °C		-	35	A
I _{SM}	peak source current	pulsed; t _p ≤ 10 µs; T _{mb} = 25 °C		-	158	A
Avalanche ruggedness						
E _{DS(AL)S}	non-repetitive drain-source avalanche energy	I _D = 15 A; V _{sup} ≤ 60 V; V _{GS} = 10 V; T _{j(init)} = 25 °C; unclamped	[1]	-	22.5	mJ
I _{AS}	non-repetitive avalanche current	T _{j(init)} = 25 °C	[1]	-	15	A

[1] Protected by 100% test

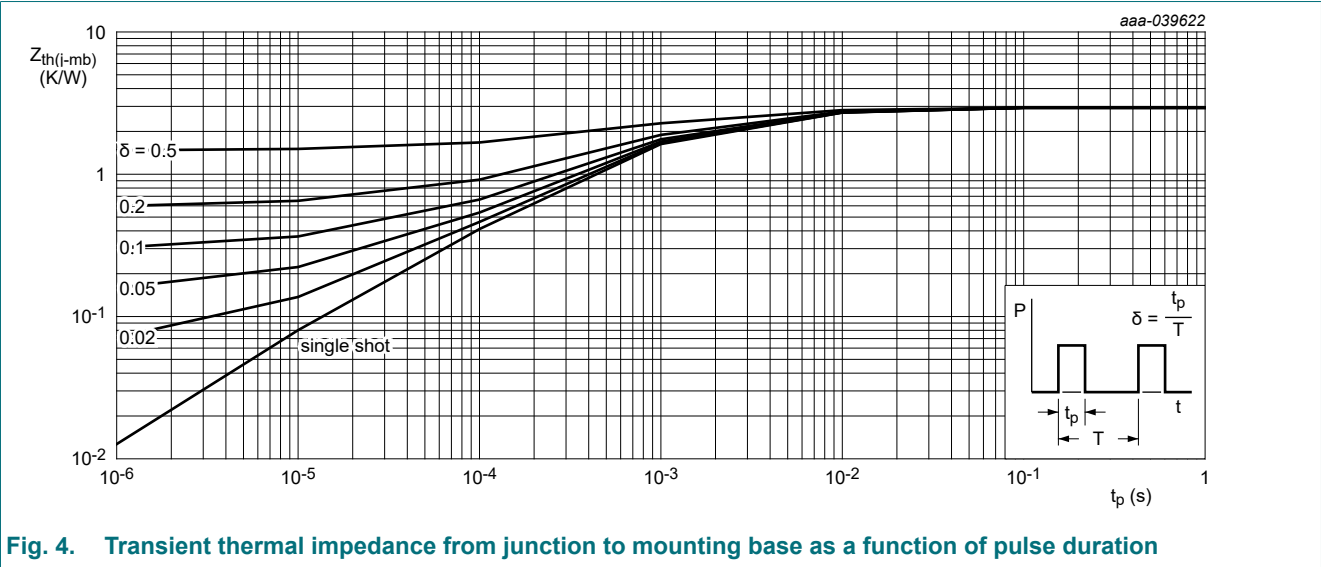




9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 4		-	2.59	2.93	K/W



10. Package outline

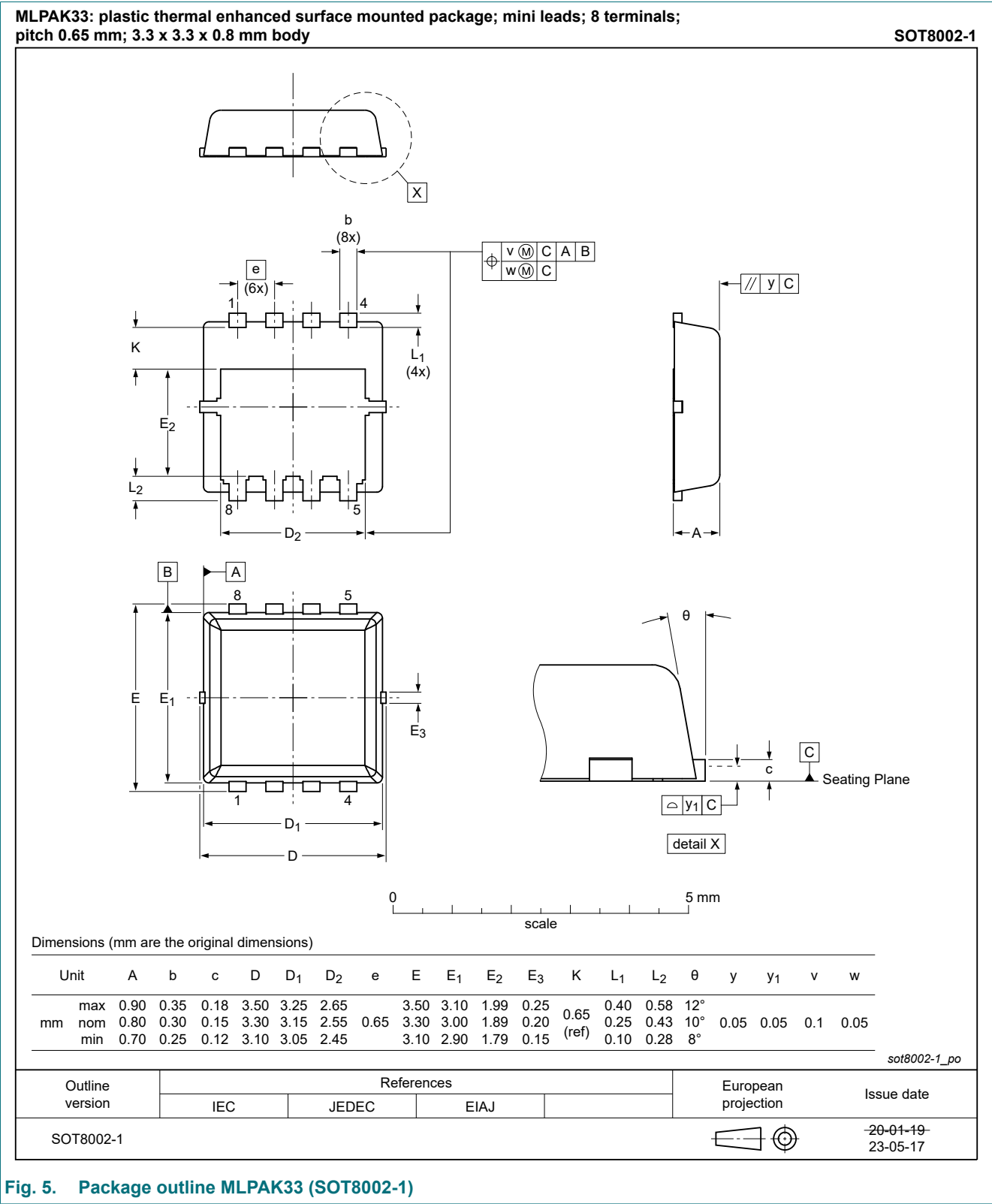


Fig. 5. Package outline MLPAK33 (SOT8002-1)

11. Soldering

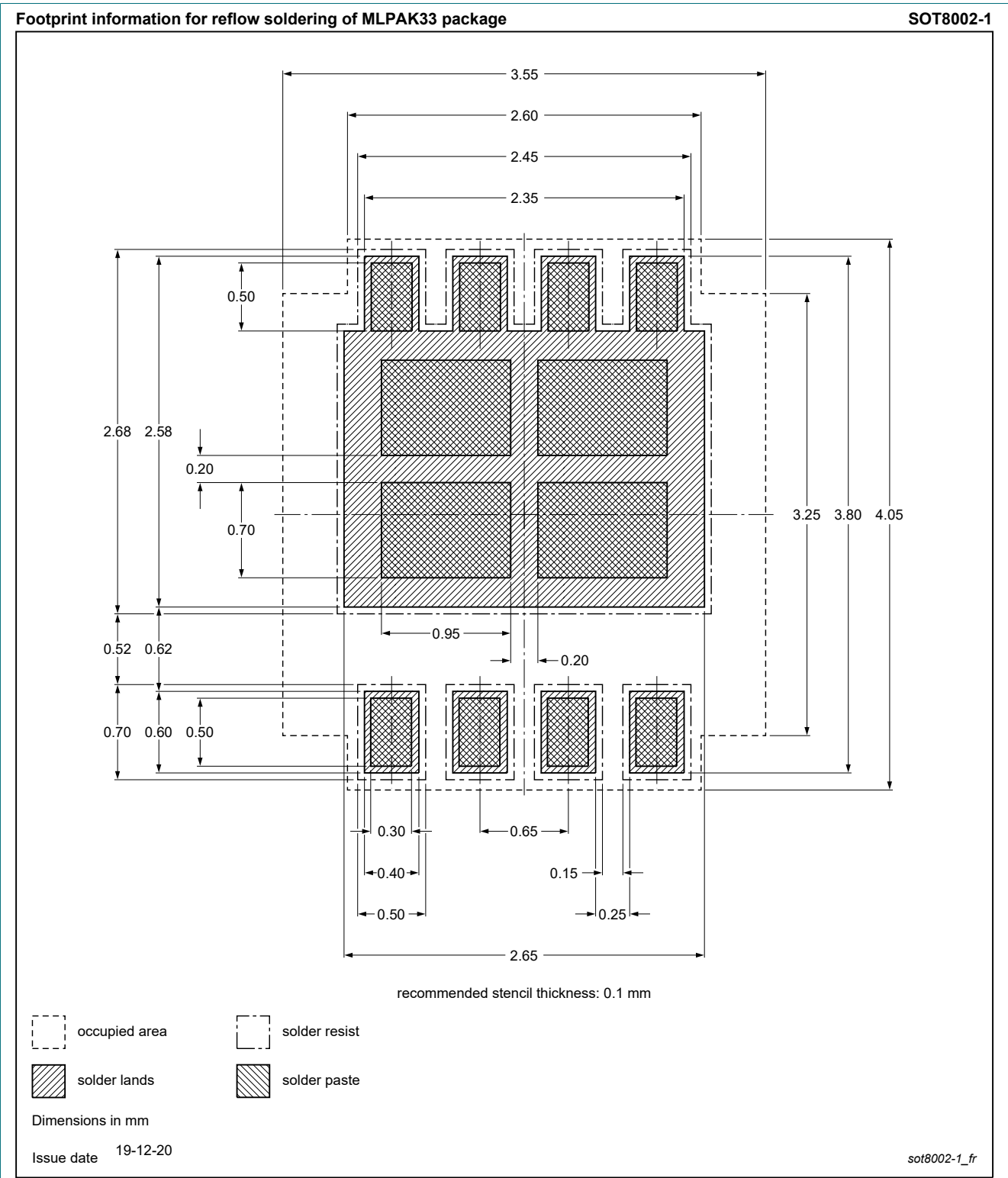


Fig. 6. Reflow soldering footprint for MLPAK33 (SOT8002-1)

12. Legal information

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Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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