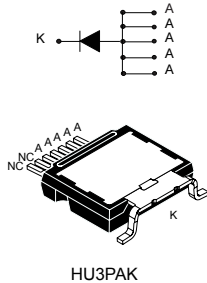


Automotive 170 V, 60 A power Schottky rectifier



HU3PAK



Product status link

[STPS60170L2Y](#)

Product summary

$I_{F(AV)}$	60 A
V_{RRM}	170 V
V_F (typ.)	0.690 V
T_j	-40 °C to +175 °C

Features

- AEC-Q101 qualified and PPAP capable 
- None or negligible reverse recovery
- V_{RRM} guaranteed from -40 °C up to 175 °C
- High junction temperature capability
- Low reverse current
- Reduce conduction, reverse and switching losses
- 100 % Avalanche tested in production
- ECOPACK2 compliant

Applications

- DC/DC converters for EV/HEV
- LLC resonant converter

Description

Housed in a HU3PAK package, this 60 A, 170 V planar Schottky diode provides high performance in a flat, topside-cooling package.

STPS60170L2Y has been developed for applications requiring a high-voltage secondary rectification diode, and in particular, for high frequency switched-mode power supply DC-DC converters used in electrical cars.

1 Characteristics

Table 1. Absolute ratings (limiting values, at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage	$T_j = -40\text{ °C to }+175\text{ °C}$	170	V
$I_{F(RMS)}$	Forward rms current		90	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$, square wave	$T_C = 160\text{ °C}$	60	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms sinusoidal}$	800	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 10\text{ }\mu\text{s}, T_j = 125\text{ °C}$	3100	W
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Operating junction temperature range ⁽¹⁾		-40 to +175	°C

1. $(dP_{tot}/dT_j) < (1/R_{th(j-a)})$ condition to avoid thermal runaway for a diode on its own heatsink.

Table 2. Thermal resistance parameters

Symbol	Parameter	Typ. value	Unit
$R_{th(j-c)}$	Junction to case	0.20	°C/W

For more information, refer to the following technical note:

- [TN1378](#):HU3PAK package mounting and thermal behaviour
- [AN5088](#): Rectifiers thermal management, handling and mounting recommendations

Table 3. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$	-		75	μA
		$T_j = 125\text{ °C}$		-	13	40	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 30\text{ A}$	-		0.82	V
		$T_j = 125\text{ °C}$			0.60	0.67	
		$T_j = 25\text{ °C}$	$I_F = 60\text{ A}$			0.91	
		$T_j = 125\text{ °C}$		-	0.69	0.76	

1. Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$

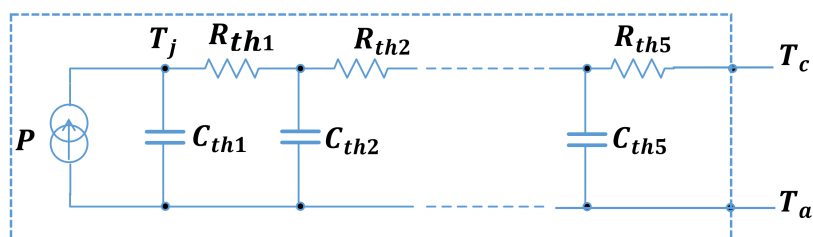
2. Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.58 \times I_{F(AV)} + 0.003 \times I_F^2 (RMS)$$

For more information, refer to the following application notes related to the power losses :

- [AN604](#): Calculation of conduction losses in a power rectifier
- [AN4021](#): Calculation of reverse losses on a power diode

Figure 1. Thermal transient impedance model circuit of the diode – $Z_{th(j-c)}$

Table 4. Components typical values of the diode thermal transient impedance model $Z_{th(j-c)}$

Ref.	Value (mK/W)	Ref.	Value (mJ/K)
R _{th1}	8.51	C _{th1}	3.09
R _{th2}	37.48	C _{th2}	5.13
R _{th3}	99.54	C _{th3}	4.52
R _{th4}	38.76	C _{th4}	24.37
R _{th5}	14.82	C _{th5}	249.9

1.1 Characteristics (curves)

Figure 2. Average forward current versus case temperature ($\delta = 0.5$)

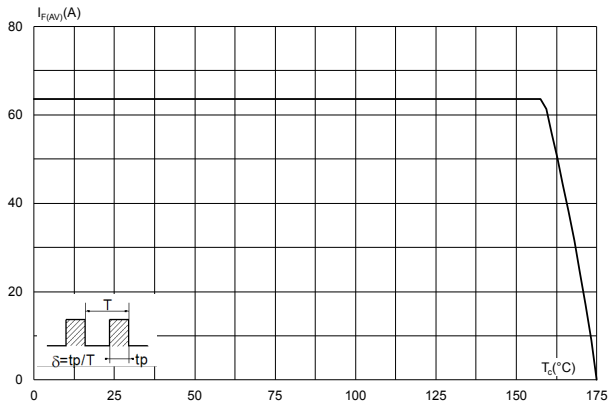


Figure 3. Relative variation of thermal impedance junction to case versus pulse duration

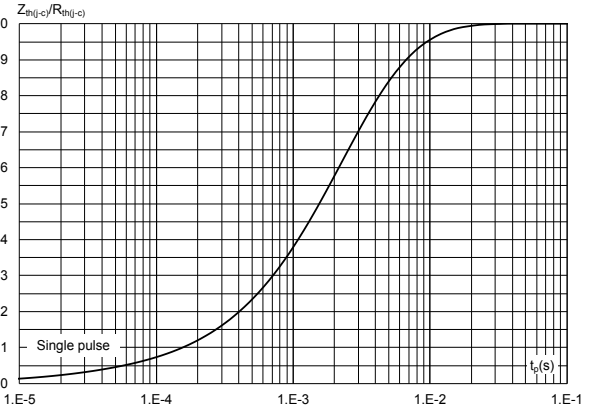


Figure 4. Normalized avalanche power derating versus pulse duration ($T_J = 125^\circ\text{C}$)

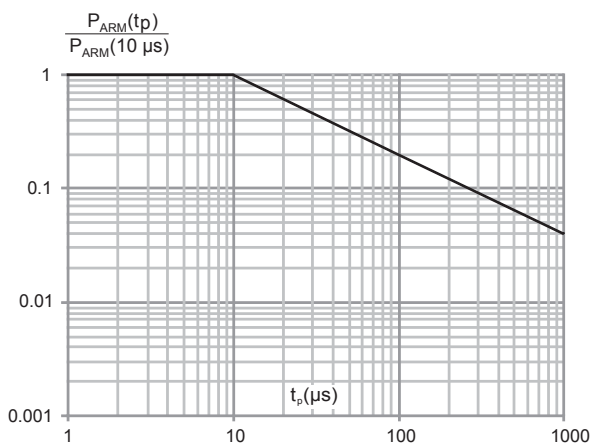


Figure 5. Reverse leakage current versus reverse voltage applied (typical values)

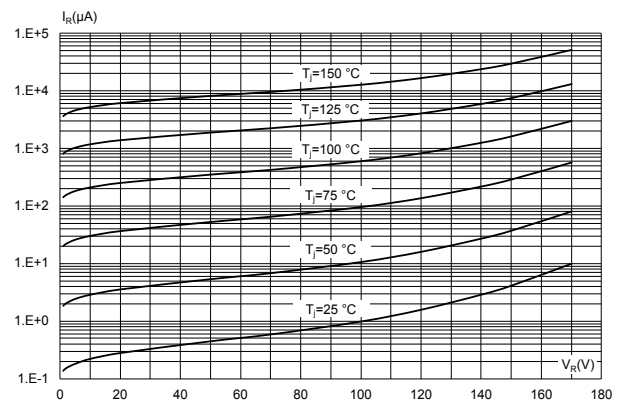


Figure 6. Junction capacitance versus reverse voltage applied (typical values)

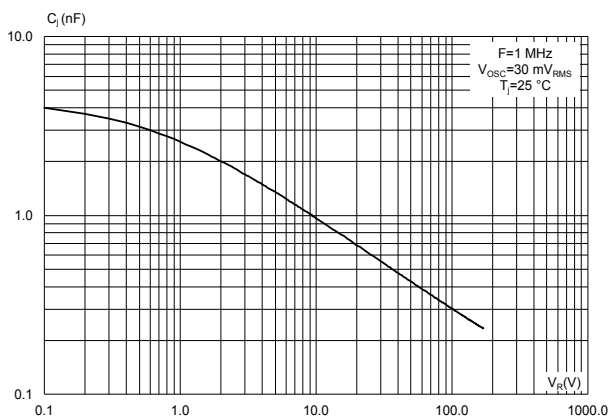


Figure 7. Forward voltage drop versus forward current (typical values)

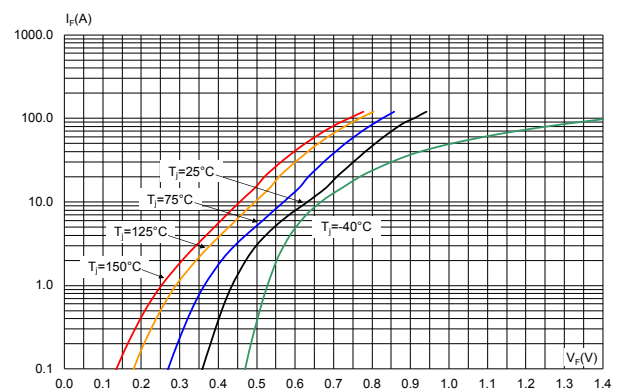
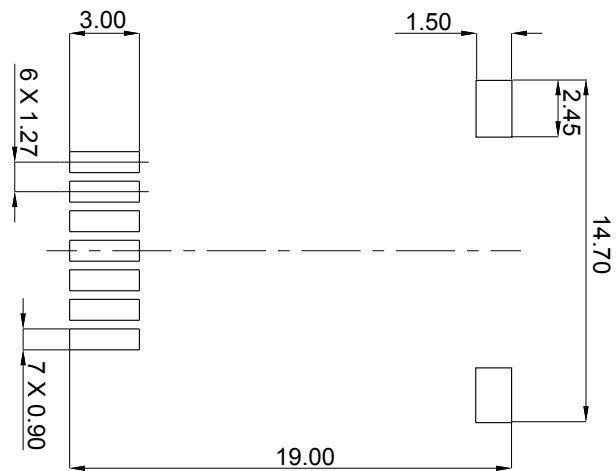


Table 5. HU3PAK package mechanical data

Ref.	Dimensions		
	mm		
	Min.	Typ.	Max.
A	3.40	3.50	3.60
A1		0.05	
b	0.50	0.60	0.70
b2	0.50	0.70	1.00
b3	0.80	0.90	1.00
c	0.40	0.50	0.60
c2	0.40	0.50	0.60
D	11.70	11.80	11.90
D1	8.80	8.955	9.10
E	13.90	14.00	14.10
E1	12.30	12.40	12.50
E2	7.75	7.80	7.85
e	BSC 1.27		
H	18.00	18.58	19.00
L	2.40	2.52	2.60
L1		3.05	
L2	0.90	1.00	1.10
L3	BSC 0.26		
L4	0.075	0.125	0.175
L5	1.83	1.93	2.03
L6	2.14	2.24	2.34
L7	4.44	4.54	4.64
aaa		0.10	
F1	2.90	3.00	3.10
F2	2.40	2.50	2.60
F3	0.25	0.35	0.45
N1	3.80	3.90	4.00
N2	0.25	0.30	0.45
N3	0.80	0.90	1.00
T	0.50	0.67	0.70
T2	9.18	9.38	9.43
θ1		0°	8°
θ2		0°	8°

1. Package outline exclusive of any mold flashes dimensions.
2. Package outline exclusive of burr dimensions.
3. Max resin gate protrusion: 0.25 mm.
4. The planarity of the package backside 50 micron max.
5. BSC: basic spacing between centers

Figure 9. HU3PAK recommended footprint (dimensions are in mm)



DM00674007_2

Note: For packing details you can see technical note [TN1173: Packing information for IPAD, protection, rectifiers, thyristors and AC Switches](#).

2.2 HU3PAK packing information

Figure 10. HU3PAK carrier tape outline

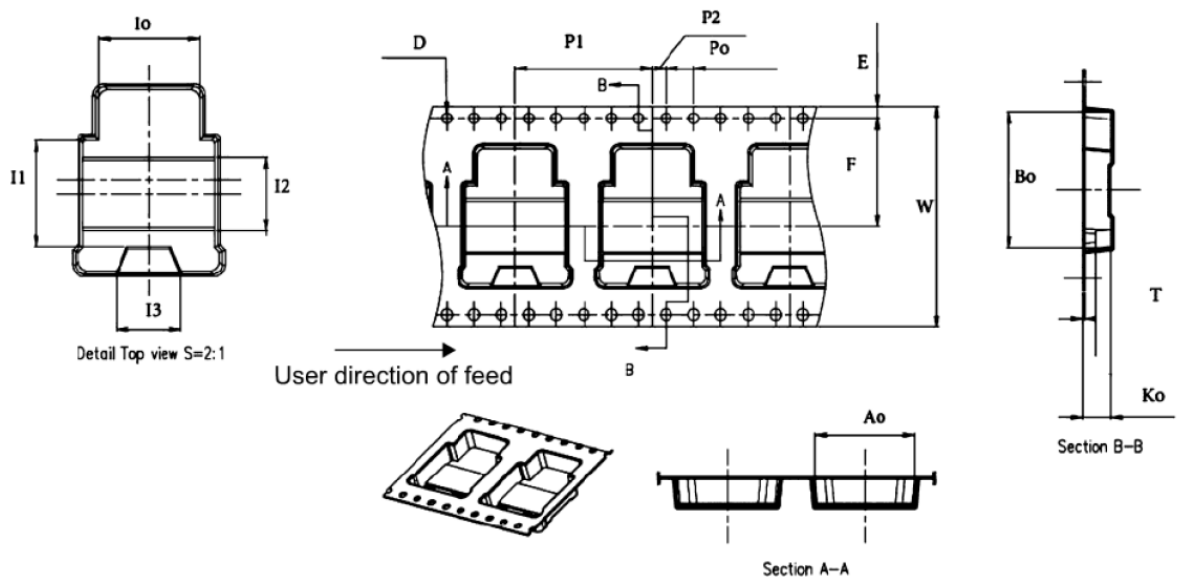


Table 6. HU3PAK carrier tape mechanical data

Ref.	Dimensions		
	mm		
	Min.	Typ.	Max.
A0	14.30	14.40	14.50
B0		19.70	
D	1.40	1.50	1.60
E	1.65	1.75	1.85
F	15.55	15.65	15.75
I0		11.00	
I1	11.50	11.60	11.70
I2		8.00	
I3		7.00	
K0		4.20	
P0	3.90	4.00	4.10
P1	19.90	20.00	20.10
P2	1.90	2.00	2.10
T	0.00	0.40	0.90
W	31.70	32.00	32.30



3 Ordering information

Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS60170L2Y	STPS60170L2Y	HU3PAK	2.32 g	600	Tape and reel

Revision history

Table 8. Document revision history

Date	Revision	Changes
17-Mar-2026	1	Initial release.
11-May-2026	2	Added Figure 1 and Table 4 .
23-Jun-2026	3	Updated <i>Title description</i> .

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