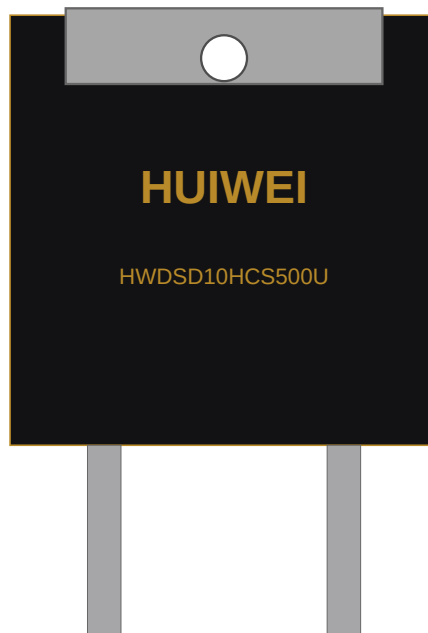




HWDS10HCS500U

5 KV SCHOTTKY. ZERO RECOVERY.

A 5000 V, 10 A Schottky barrier diode that replaces bipolar rectifiers with a unipolar design: essentially no switching losses, higher efficiency and smaller heat sinks.



HUIWEI marking concept
Package availability pending confirmation

5000 V

VRRM, repetitive peak reverse voltage

10 A

Forward current at $T_c = 165^\circ\text{C}$

365 nC

Capacitive charge at $V_R = 2000\text{ V}$

FEATURES

- 5 kV Schottky rectifier
- Zero reverse recovery current
- High-frequency operation
- Temperature-independent switching behavior
- Extremely fast switching

BENEFITS

- Replace bipolar with unipolar rectifiers
- Essentially no switching losses
- Higher efficiency
- Reduction of heat sink requirements
- Parallel devices without thermal runaway

APPLICATIONS

Switch mode power supplies (SMPS)

Power factor correction

Motor drives



HWDS10HCS500U

Maximum rated values (Tc = 25 °C unless stated)

Symbol	Parameter	Value	Unit	Test conditions
VRRM	Repetitive peak reverse voltage	5000	V	
IF	Continuous forward current	66 / 33 / 10	A	Tc = 25 / 135 / 165 °C (Fig. 3)
IFRM	Repetitive peak forward surge current	63 / 53	A	Tc = 25 / 110 °C, tp = 10 ms, half sine
IFSM	Non-repetitive forward surge current	81 / 70	A	Tc = 25 / 110 °C, tp = 10 ms, half sine
Ptot	Power dissipation	833 / 361	W	Tc = 25 / 110 °C (Fig. 4)
Tj	Operating temperature	-55 to +175	°C	
Tstg	Storage temperature	-55 to +175	°C	

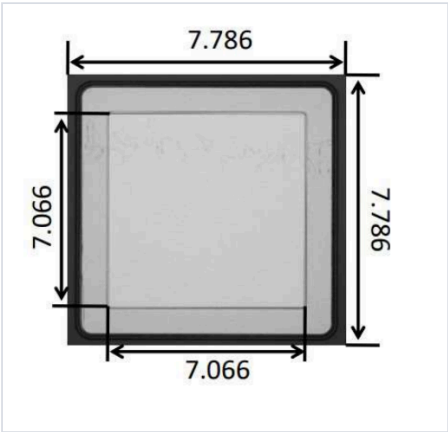
Electrical and thermal characteristics (Tj = 25 °C)

Symbol	Parameter	Typ.	Max.	Unit	Test conditions
VF	Forward voltage	14	19	V	IF = 10 A, Tj = 25 °C
VF	Forward voltage	24	30	V	IF = 10 A, Tj = 175 °C
IR	Reverse current	0.6		μA	VR = 5000 V, Tj = 25 °C
IR	Reverse current	14		μA	VR = 5000 V, Tj = 175 °C
QC	Total capacitive charge	365		nC	VR = 2000 V
C	Total capacitance	3880		pF	VR = 0 V, f = 1 MHz
C	Total capacitance	131		pF	VR = 1000 V, f = 1 MHz
C	Total capacitance	98		pF	VR = 2000 V, f = 1 MHz
EC	Capacitance stored energy	241		μJ	VR = 2000 V
RθJC	Thermal resistance, junction to case	0.18		°C/W	

Package and die

Package	TO-247 4L Plus (2LC)
Die size	7.786 × 7.786 mm
Anode pad opening	7.066 × 7.066 mm
Die thickness	364 μm ±10%
Topside anode metallization	Al, 4 μm
Backside cathode metallization	Ti/Ni/Ag, 2.05 μm
Frontside passivation	SiO ₂ polyimide

Die (mm)





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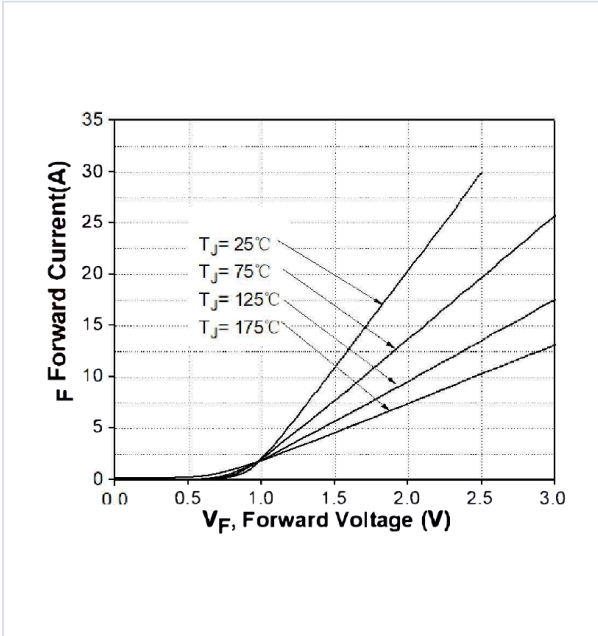


Figure 1. Forward characteristics

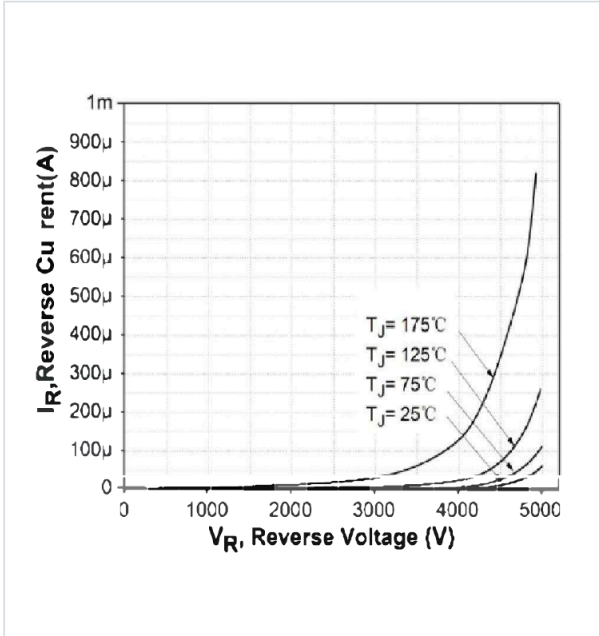


Figure 2. Reverse characteristics

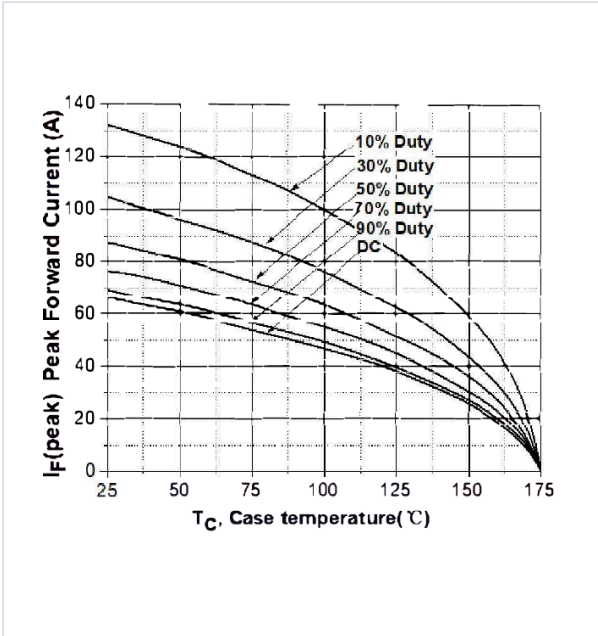


Figure 3. Current derating

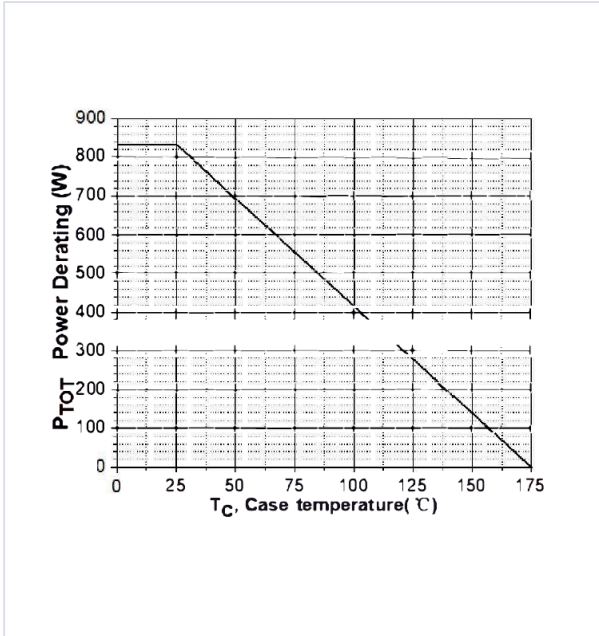


Figure 4. Power derating



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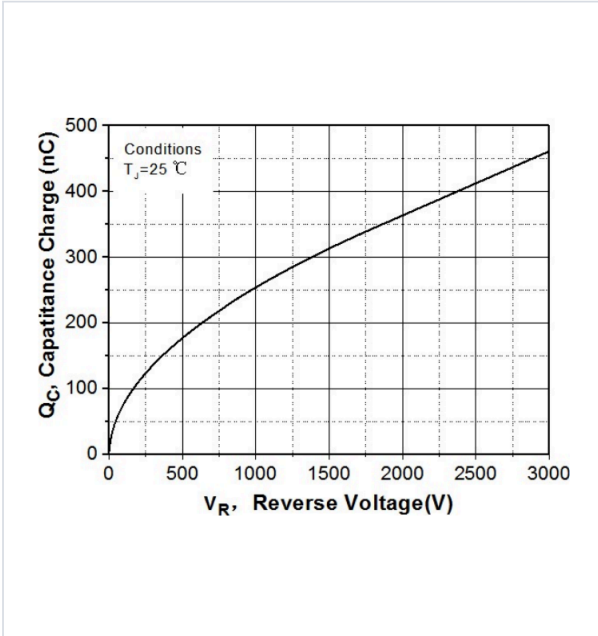


Figure 5. Capacitive charge vs. reverse voltage

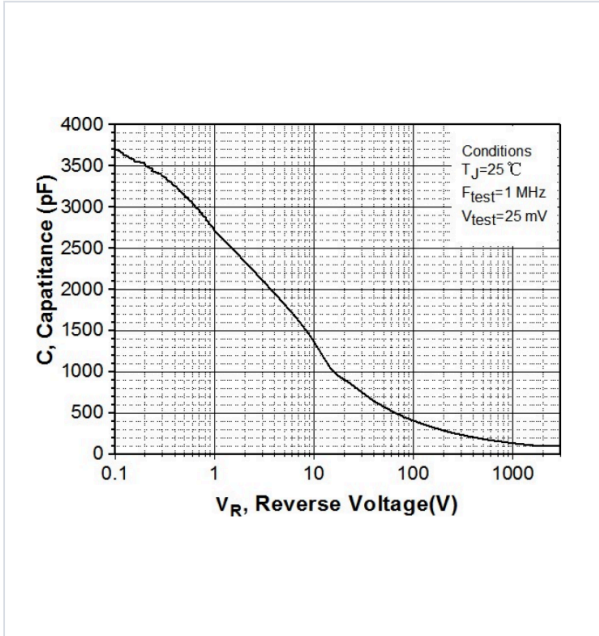


Figure 6. Capacitance vs. reverse voltage

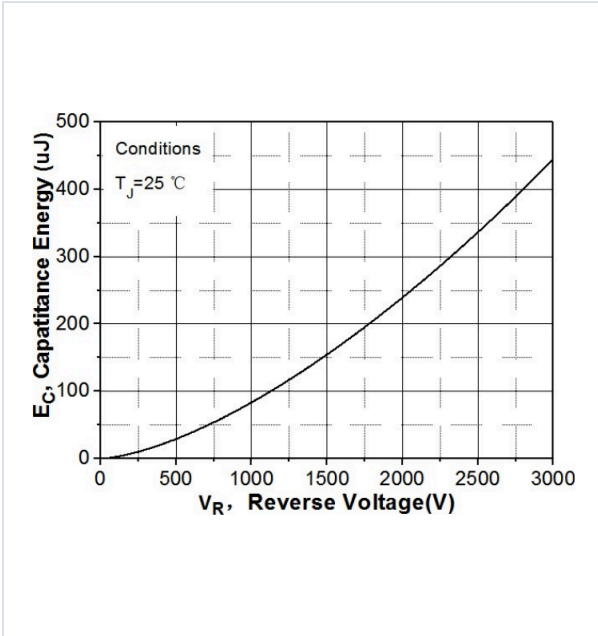


Figure 7. Capacitance stored energy

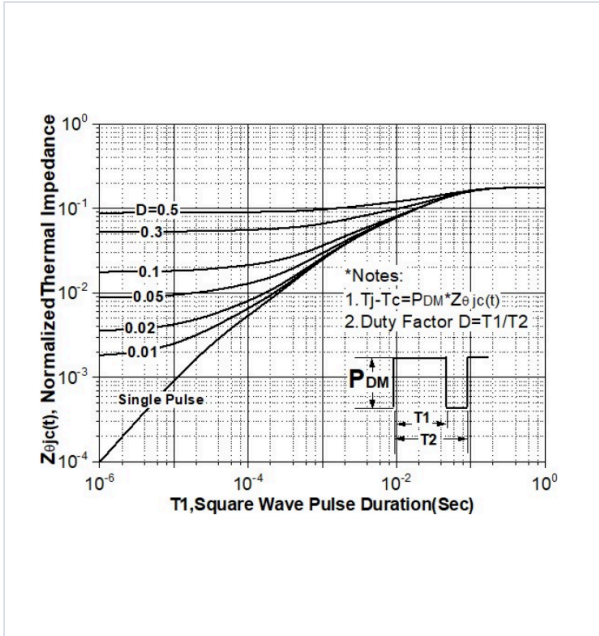
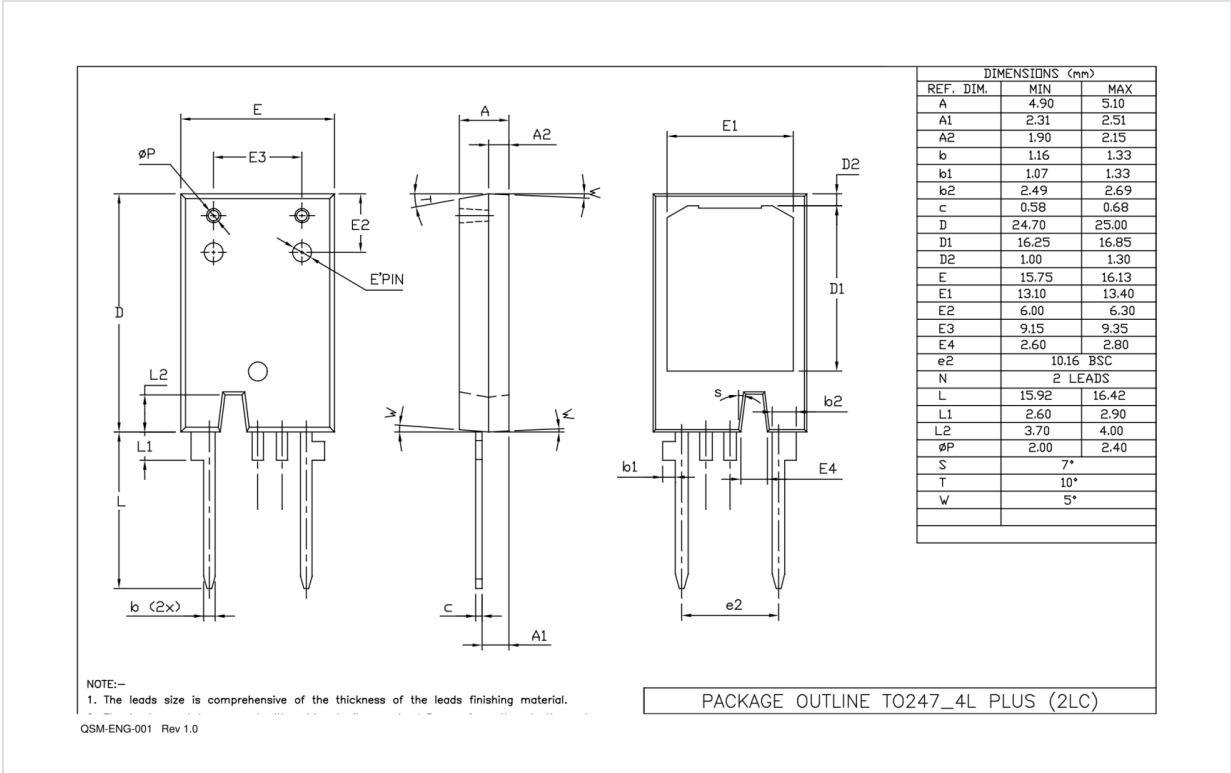


Figure 8. Transient thermal response (junction to case)



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T0-247 4L Plus (2LC) package outline (mm)



Ref: QSM-ENG-001. All dimensions in mm. Min/max values per drawing.

Attention

- Specifications of any and all products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- We assume no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Silicon products described or contained herein.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc.