

Features

- Zero or negligible reverse recovery
- Low forward voltage
- Positive temperature coefficient
- Extended surge current capability
- High junction temperature
- Temperature invariant switching behavior

V_{RRM}	=	1200	V
$I_F (T_C=141^{\circ}C)$	=	40	A
$Q_C (V_R=800V)$	=	200	nC

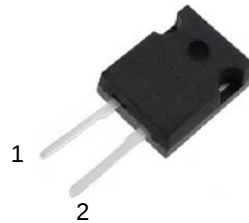
Benefits

- System efficiency improvement over Si diodes
- Higher switching frequency
- Increased power density
- Essentially no switching losses

Applications

- Solar inverters
- Motor drivers
- Power Factor Correction
- SMPS

Package



TO-247-2



Part Number	Package	Marking
ASYD040120C	TO-247-2	ASYD040120C

Electrical Specifications ($T_C=25^{\circ}\text{C}$, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_R	Reverse Blocking Voltage	$I_R=250\mu\text{A}$	1200			V
I_R	Reverse Current	$V_R=1200\text{V}$ $T_J=25^{\circ}\text{C}$ $T_J=175^{\circ}\text{C}$		1 50	100 200	μA
V_F	Forward Voltage	$I_F=40\text{A}$ $T_J=25^{\circ}\text{C}$ $T_J=175^{\circ}\text{C}$		1.5 2.2	1.7 2.6	V

Note: All characteristics are tested with the parts assembled in TO-247-2 package.

Dynamic Characteristics ($T_C=25^{\circ}\text{C}$, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
C_j	Typical Junction Capacitance	$V_R=0.1\text{ V}$, $f=1\text{ MHz}$ $V_R=400\text{ V}$, $f=1\text{ MHz}$ $V_R=800\text{ V}$, $f=1\text{ MHz}$		2500 180 160		pF
Q_C	Total Capacitive Charge	$V_R=400\text{V}$ $V_R=800\text{V}$		135 200		nC
E_C	Capacitive Stored Energy,	$V_R=400\text{V}$ $V_R=800\text{V}$		15 55		μJ

Note: All characteristics are tested with the parts assembled in TO-247-2 package.

Thermal Resistances ($T_C=25^{\circ}\text{C}$, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
$R_{th(j-c)}$	Thermal Resistance, Junction – Case			0.33	0.38	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	Thermal Resistance, Junction – Ambient			31		$^{\circ}\text{C/W}$

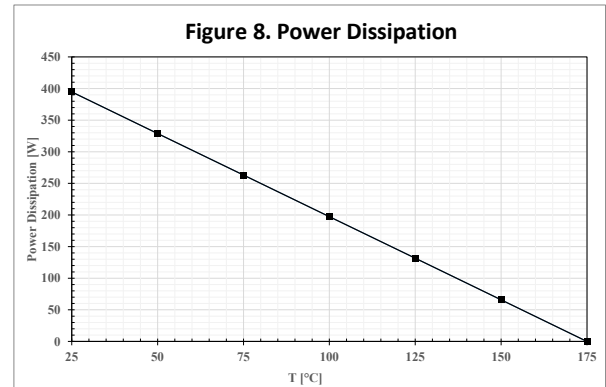
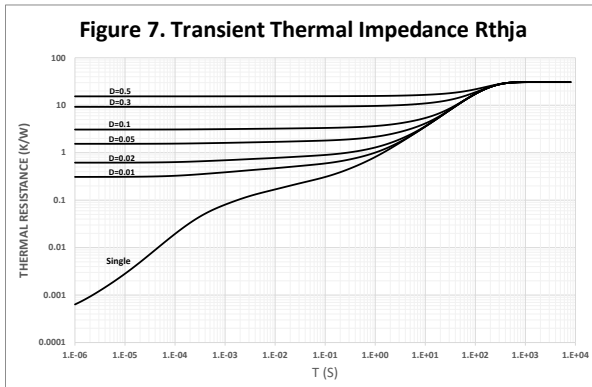
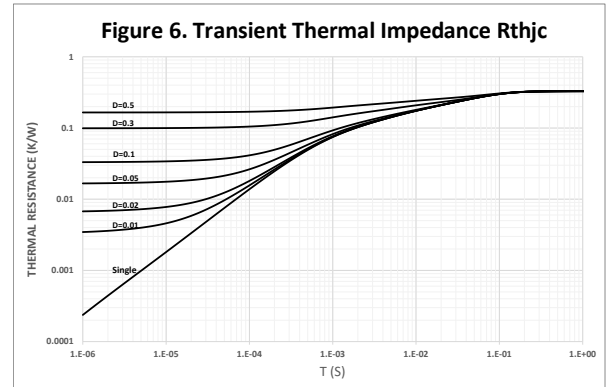
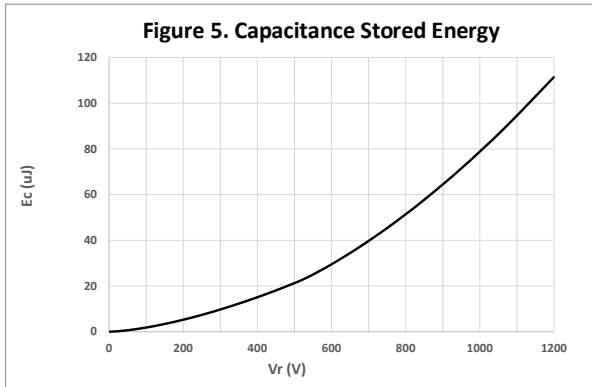
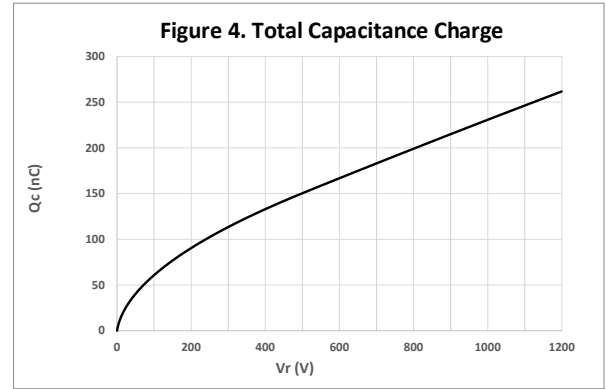
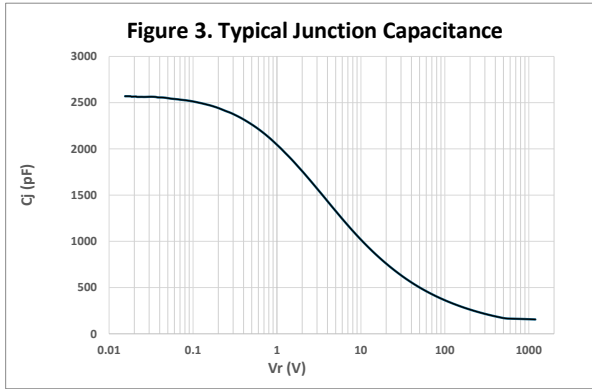
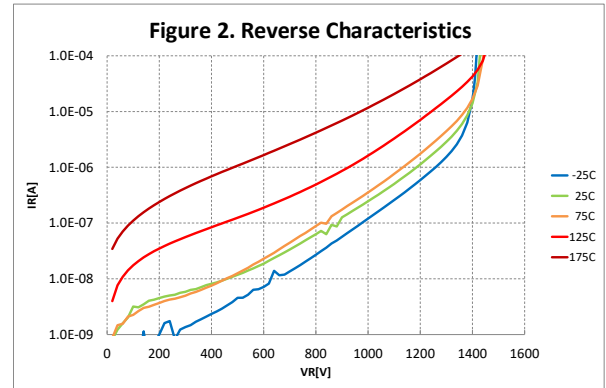
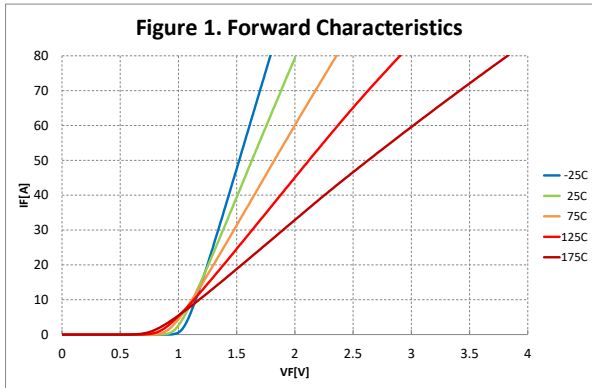
Note: All characteristics are tested with the parts assembled in TO-247-2 package.

Absolute Maximum Ratings (T_C=25°C, unless otherwise specified.)

Symbol	Parameter	Rating
V _{RRM}	Repetitive Peak Reverse Voltage	1200V
I _F	Continuous Forward Current T _C =25 °C, D=1 T _C =100 °C, D=1 T _C =141 °C, D=1	92 A 63 A 40 A
I _{FSM}	Non-Repetitive Forward Surge Current T _C =25 °C, t _p =10ms T _C =125 °C, t _p =10ms	447 A 256 A
I _{FRM}	Repetitive Forward Surge Current T _C =25 °C, t _p =10ms T _C =125 °C, t _p =10ms	167 A 94 A
P _{TOT}	Power dissipation for R _{th(j-c,max)} , T _C =25 °C	400 W
EAS	Avalanche energy, T _J = 25°C, L = 0.5 mH, V = 50 V	430 mJ
T _J , T _{stg}	Operating and Storage Temperature	-55°C to 175°C

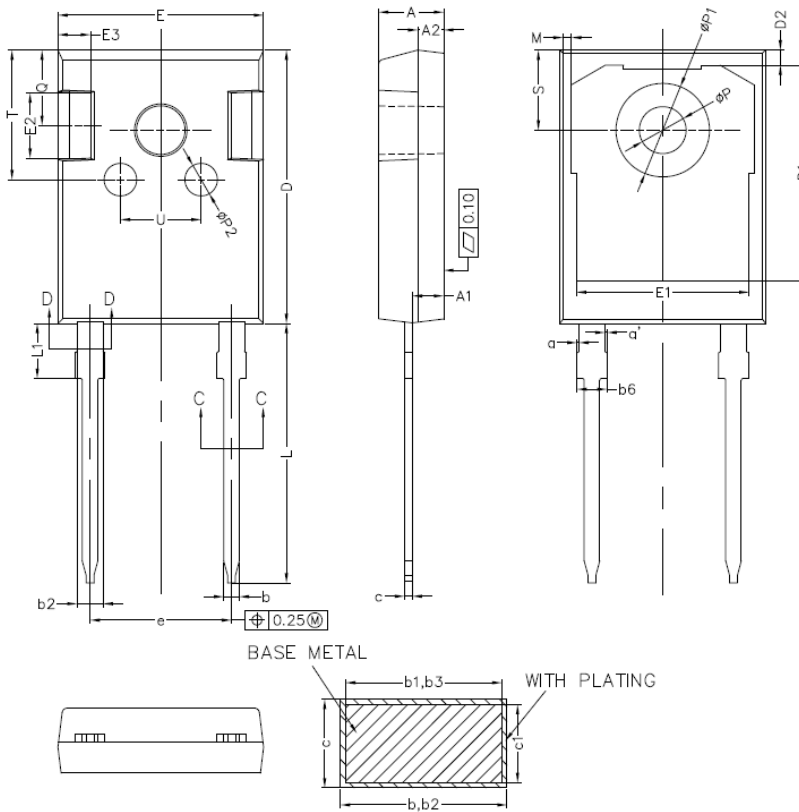
Note: All characteristics are tested with the parts assembled in TO-247-2 package , and exposure to absolute maximum ratings for prolonged time periods may affect device reliability.

Typical Performance



Package Dimensions

Package TO-247-2



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0	—	0.15
a'	0	—	0.15
b	1.16	—	1.29
b1	1.15	1.20	1.25
b2	1.96	—	2.06
b3	1.95	2.00	2.02
b6	—	—	2.25
c	0.59	—	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
E	15.70	15.80	15.90
E1	13.06	13.26	13.46
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	10.78	10.88	10.98
L	19.80	19.92	20.10
L1	3.93	—	4.46
M	0.35	—	0.95
P	3.50	3.60	3.70
P1	7.00	—	7.40
P2	2.40	2.50	2.60
Q	5.60	—	6.00
S	6.05	6.15	6.25
T	9.80	—	10.20
U	6.00	—	6.40

NOTES:
1. ALL DIMENSIONS REFER TO JEDEC STANDARD TO-247 AD DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.
2. EJECTION MARK DEPTH $0.10^{+0.15}_{-0.05}$.