



## Features

- 650-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$

## Benefits

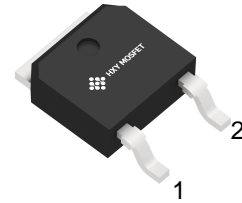
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

## Applications

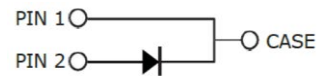
- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives



Part Number	Package	Qty(PCS)
S3D08065E	TO-252N-2L	2500



TO-252N-2L



## Maximum Ratings ( $T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V	
$V_{RSM}$	Surge Peak Reverse Voltage	650	V	
$I_F$	Continuous Forward Current	22.3 10.5 8	A	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=149.5^\circ\text{C}$
$I_{FRM}$	Repetitive Peak Forward Surge Current	30	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	60	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$P_{tot}$	Power Dissipation	89 38	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$	
$\int i^2 dt$	$i^2 dt$ value	18	$\text{A}^2\text{s}$	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave



## Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{DC}$	DC Blocking Voltage	650			V	
$V_F$	Forward Voltage		1.42 1.88	1.7 2.5	V	$I_F = 6\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 6\text{ A}$ $T_J = 175^\circ\text{C}$
$I_R$	Reverse Current		0.12 0.91	50 100	$\mu\text{A}$	$V_R = 650\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 650\text{ V}$ $T_J = 175^\circ\text{C}$
$Q_C$	Total Capacitive Charge		21		nC	$V_R = 400\text{ V}$ $T_J = 25^\circ\text{C}$
C	Total Capacitance		395 42 41		pF	$V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 200\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 400\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$
$E_C$	Capacitance Stored Energy		5		$\mu\text{J}$	$V_R = 400\text{ V}$

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.69	$^\circ\text{C/W}$

## Typical Performance

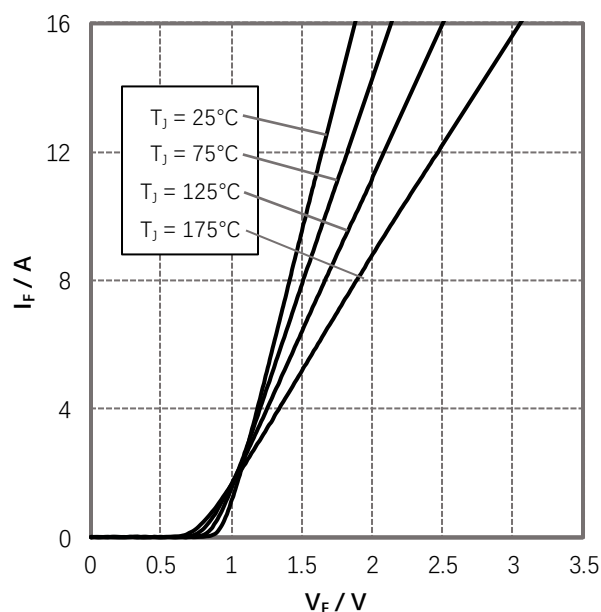


Figure 1. Forward Characteristics

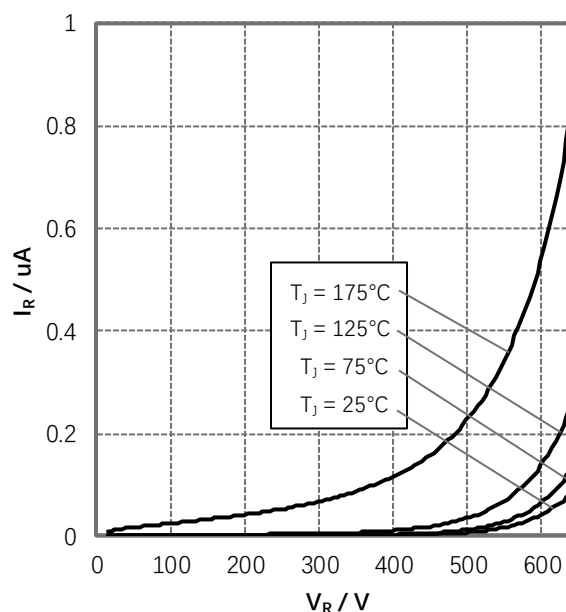


Figure 2. Reverse Characteristics

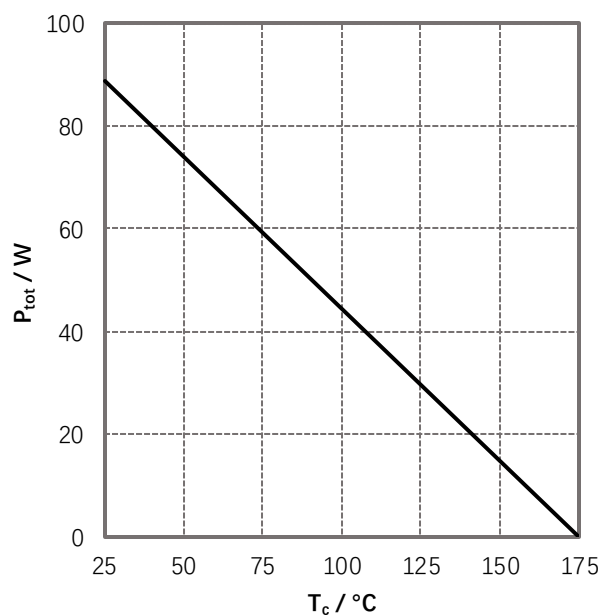


Figure 3. Power Derating

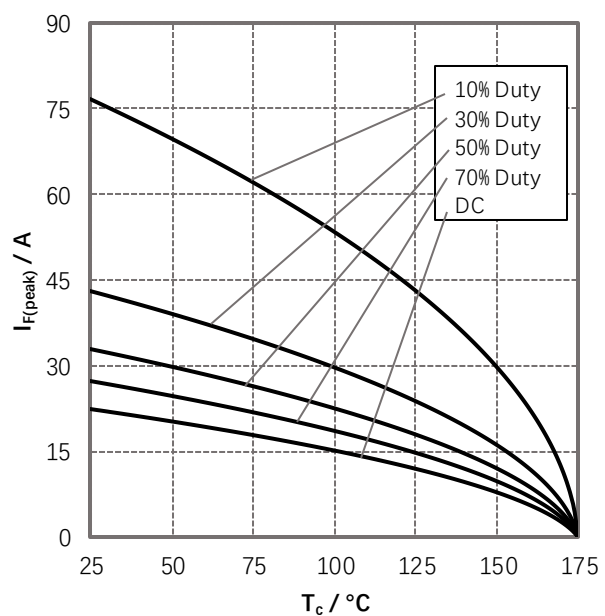


Figure 4. Current Derating

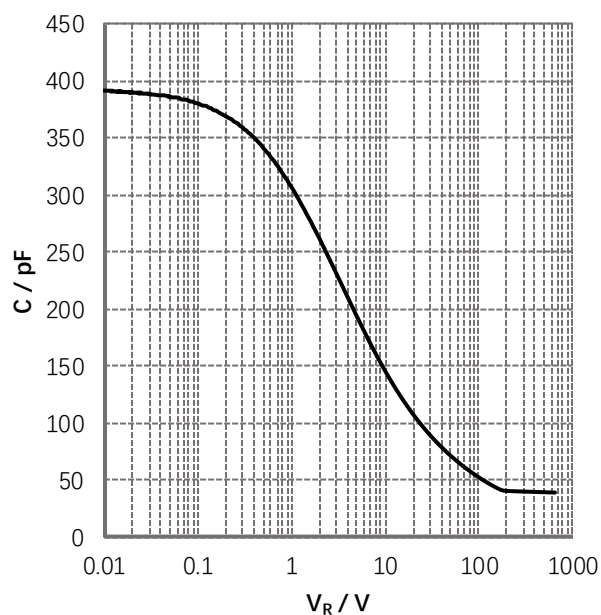


Figure 5. Capacitance vs. Reverse Voltage

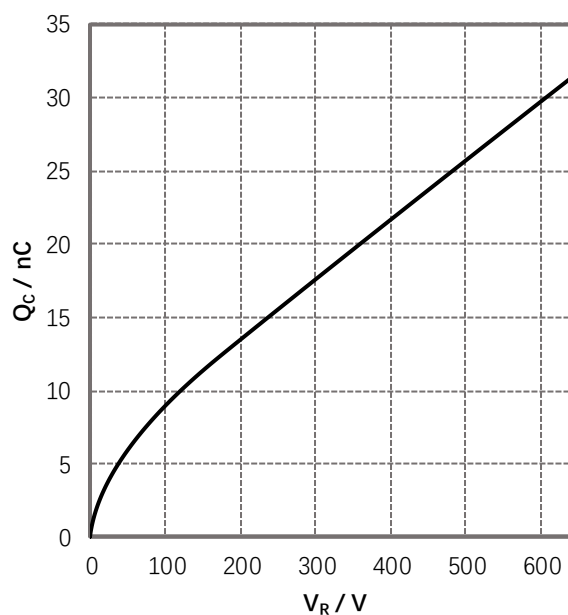


Figure 6. Total Capacitance Charge vs. Reverse Voltage

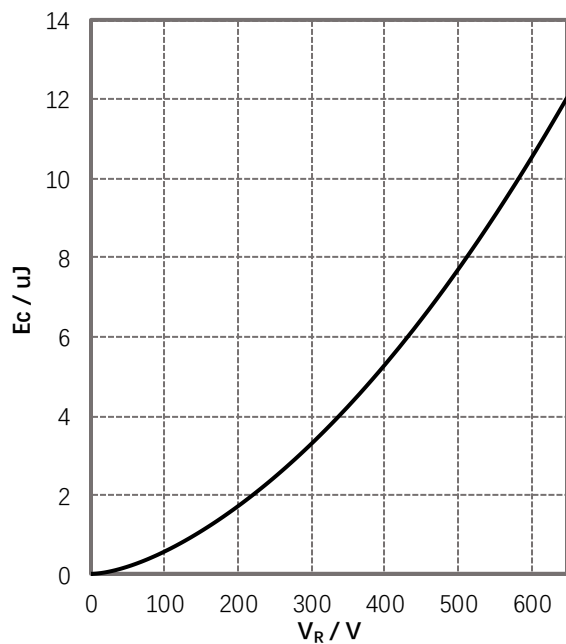


Figure 7. Capacitance Stored Energy

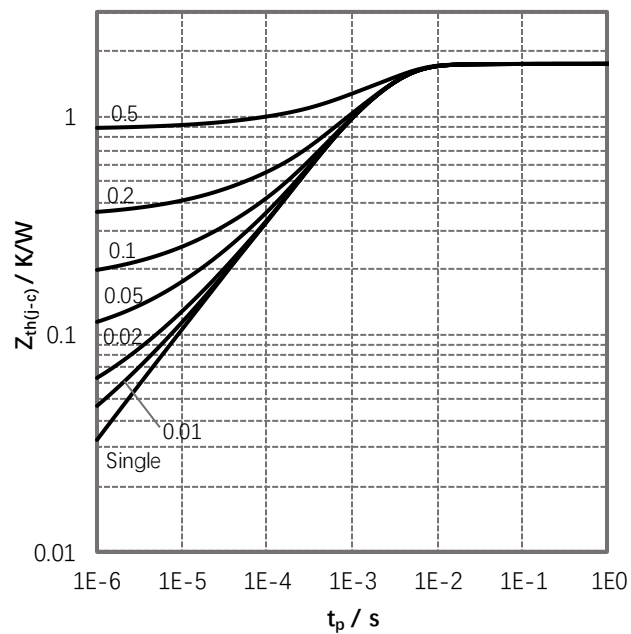
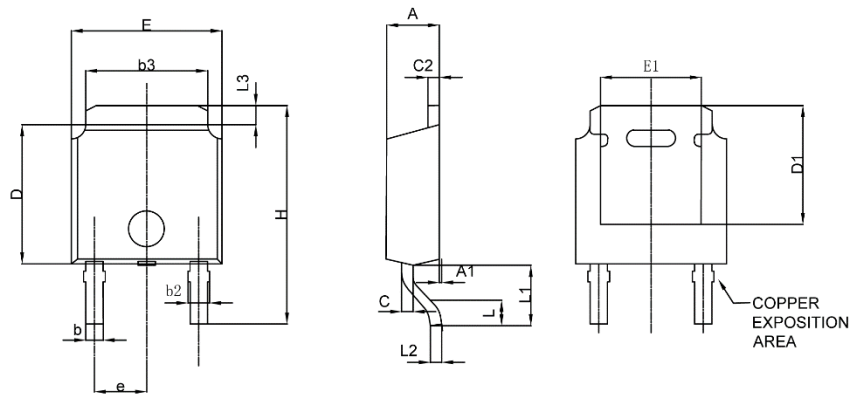


Figure 8. Transient Thermal Impedance



## Package Information TO-252N-2L



Symbol	DIMENSIONAL REQMTS		
	Min	Nom	Max
E	6.35	6.60	6.73
L	1.40	1.52	1.78
L1	2.743REF		
L2	0.508BSC		
L3	0.89	---	1.27
D	5.97	6.10	6.22
H	9.40	10.00	10.40
b	0.64	0.76	0.89
b2	0.76	0.84	1.14
b3	4.95	5.34	5.46
e	2.286BSC		
A	2.18	2.30	2.39
A1	0.00	---	0.13
c	0.46	0.50	0.61
c2	0.46	0.50	0.60
D1	5.21	---	---
E1	4.32	---	---

**Note:**

- 1.All Dimension Are In mm
- 2.Package Body Sizes Exclude Mold Flash,Protrusion Or Gate Burrs.  
Mold Flash,Protrusion Or Gate Burrs Shall Not Exceed 0.10mm Per Side.
- 3.Package Body Sizes Determined At The Outermost Extremes  
Of The Plastic Body Exclusive Of Mold Flash,  
Gate Burrs And Interlead Flash,  
But Including Any Mismatch Between  
The Top And Bottom Of The Plastic Body.
- 4.The Package Top May Be Smaller Than The Package Bottom.
- 5.Dimension "b" Does Not Include Dambar Protrusion.  
Allowable Dambar Protrusion Shall Be 0.10mm  
Total In Excess Of "b" Dimension At Maximun Material Condition.  
The Dambar Cannot Be Located On The Lower Radius Of The Foot.



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