



## General Description

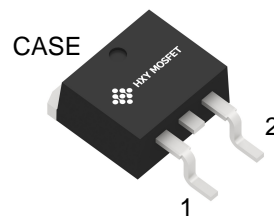
This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

## Features

- Low conduction loss due to low  $V_F$
- Extremely low switching loss by tiny  $Q_c$
- Highly rugged due to better surge current
- Industrial standard quality and reliability

## Applications

- UPS
- Power Inverter
- High performance SMPS
- Power factor correction



TO-263



Ordering Part Number	Package	Brand
AIDK12S65C5ATMA1	TO-263	HXY MOSFET



**Maximum Ratings** (at  $T_j = 25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$	650	V
Surge Peak Reverse Voltage	$V_{RSM}$	650	V
DC Peak Reverse Voltage	$V_R$	650	V
Continuous Forward Current $T_C = 25^\circ\text{C}$ $T_C = 135^\circ\text{C}$ $T_C = 160^\circ\text{C}$	$I_F$	30 15 12	A
Repetitive Peak Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$I_{FRM}$	48 29	A
Non-Repetitive Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$I_{FSM}$	90 70	A
$i^2dt$ value $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$\int i^2 dt$	40.5 24.3	$\text{A}^2\text{s}$
Power dissipation $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	$P_{tot}$	92 40	W
Operating junction Range	$T_j$	-55 to +175	$^\circ\text{C}$
Storage temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case.	$R_{thJC}$	1.62	$^\circ\text{C/W}$



**Electrical Characteristics** (at  $T_j = 25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	$V_F$	-	1.35	1.55	V	$I_F=12\text{A}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Reverse Current	$I_R$	-	-	50	$\mu\text{A}$	$V_R=650\text{V}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Total Capacitive Charge	$Q_C$	-	27	-	nC	$V_R=400\text{V}$ , $T_j=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$
Total Capacitance	$C$	-	561	-	pF	$T_j=25^\circ\text{C}$ , $f=1\text{MHz}$ $V_R=0\text{V}$ $V_R=200\text{V}$ $V_R=400\text{V}$

**Characteristics Curve:**

Fig 1: Forward Characteristics

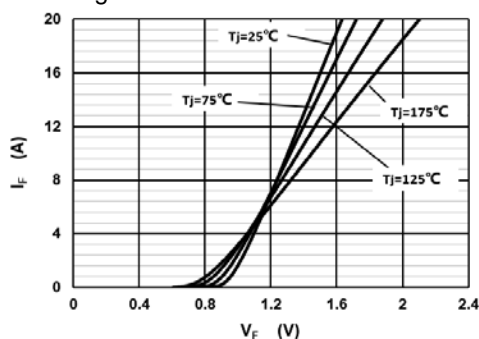


Fig 2: Reverse Characteristics

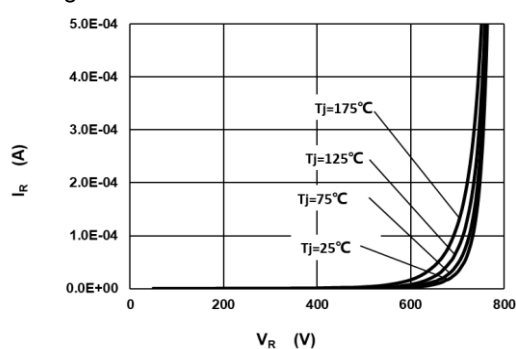


Fig 3: Current Derating

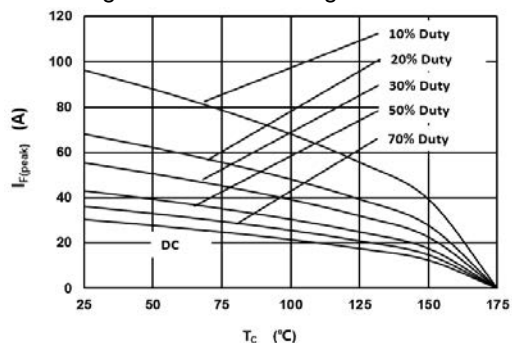


Fig 4: Power Derating

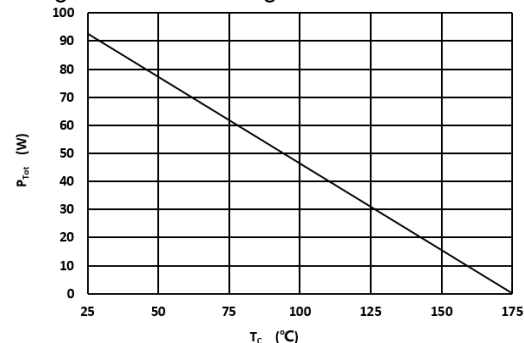




Fig 5: Capacitance vs. Reverse Voltage

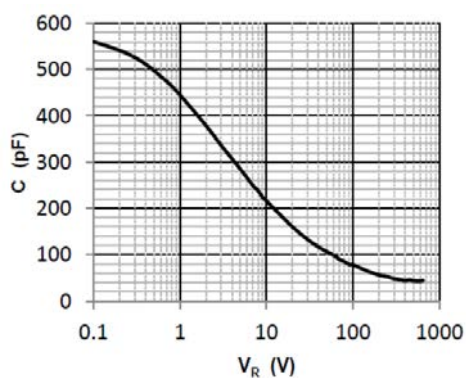


Fig 6: Reverse Charge vs. Reverse Voltage

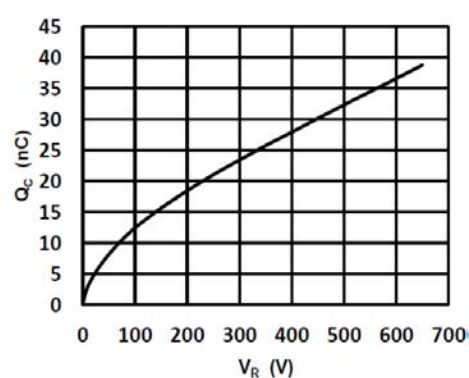


Fig 7: Typical Capacitance Stored Energy

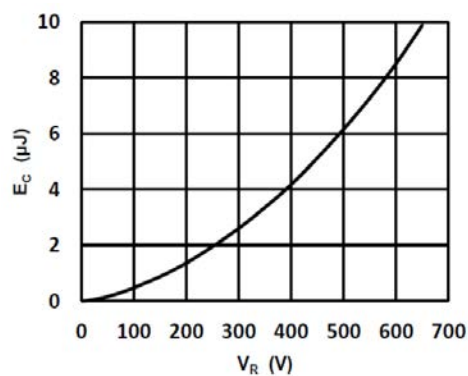
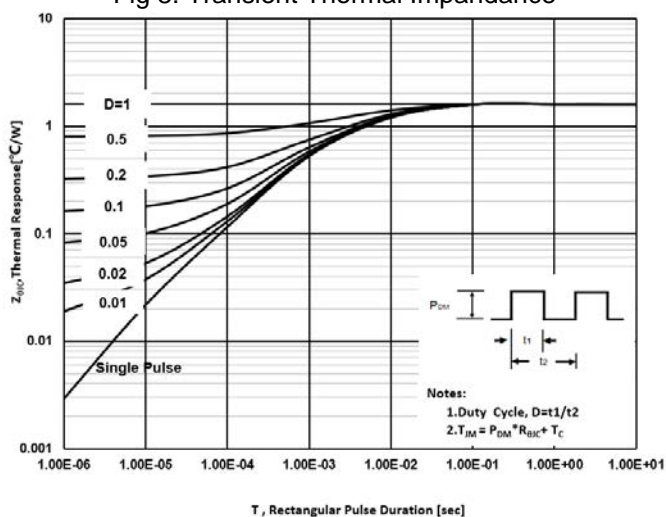


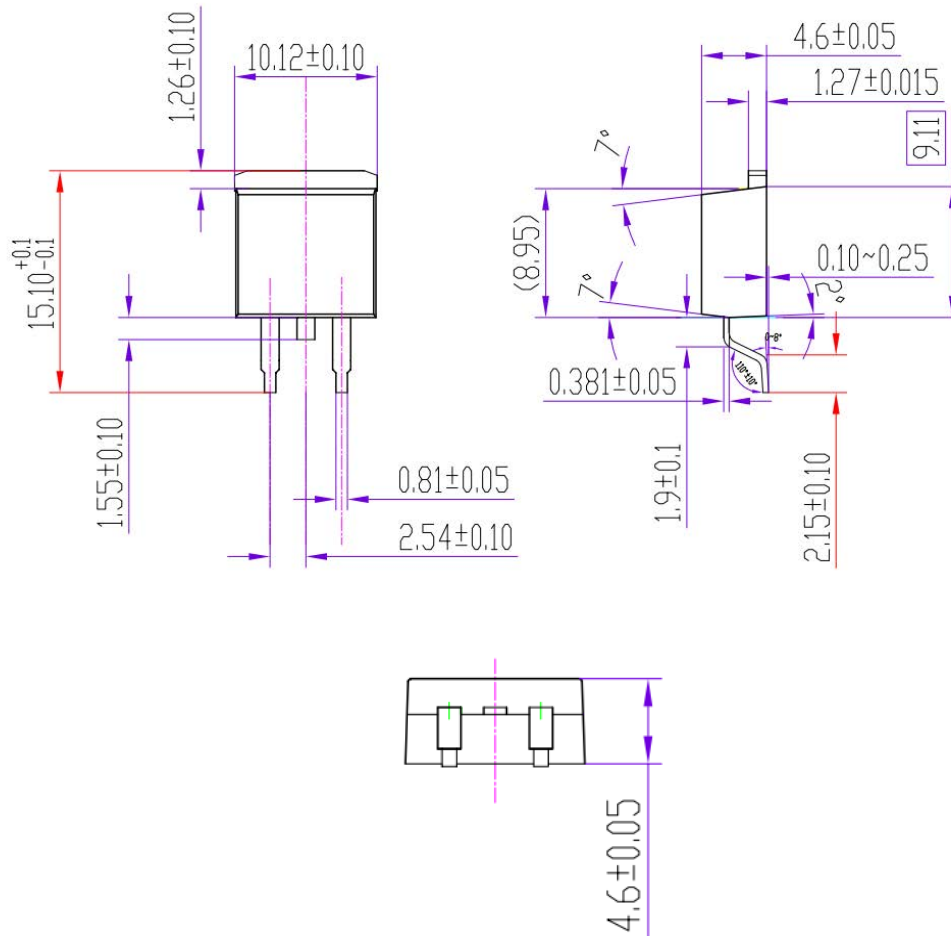
Fig 8: Transient Thermal Impandance





## Package Dimensions

Package TO-263





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