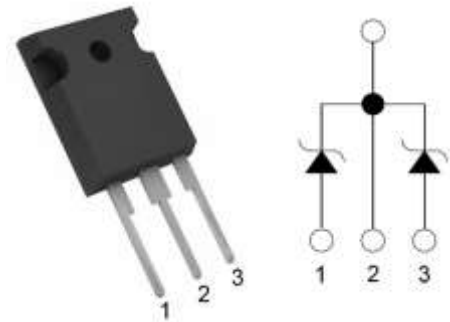


Product Summary

$V_R = 1200\text{ V}$
 $I_F = 20\text{ A (}T_C=150^\circ\text{C)}^{**}$
 $Q_C = 104\text{ nC (}V_R=800\text{V)}^{**}$



TO-247-3

Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- High surge current capability

Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- High Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

Applications

- Servo Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

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

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Peak Reverse Surge Voltage	V_{RSM}		1200	V
DC Blocking Voltage	V_R		1200	V
Continuous Forward Current (per leg / per device)	I_F	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=150^\circ\text{C}$	38/76 16/32 10/20	A
Non repetitive Forward Surge Current *	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	100	A
		$T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	90	
Repetitive peak Forward Surge Current *	I_{FRM}	$T_C = 25^\circ\text{C}$, $t_p=10\text{ ms}$, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	90	A
		$T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	80	
Total power dissipation (per leg / per device)	P_D	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	150/300 65/150	W
Diode dv/dt ruggedness	dv/dt	$V_R = 0\text{-}1200\text{V}$	60	V/ns
Operating Junction Temperature	T_J		-55 to 175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55 to 175	$^\circ\text{C}$

Note : * Per leg ** Per device

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage *	V_{DC}	$T_J = 25^{\circ}C$	1200			V
Forward Voltage *	V_F	$I_F = 10A, T_J = 25^{\circ}C$		1.45	1.8	V
		$I_F = 10A, T_J = 125^{\circ}C$		1.8		
		$I_F = 10A, T_J = 175^{\circ}C$		2.0		V
Reverse Current *	I_R	$V_R = 1200V, T_J = 25^{\circ}C$		5	200	μA
		$V_R = 1200V, T_J = 125^{\circ}C$		15	250	μA
		$V_R = 1200V, T_J = 175^{\circ}C$		60	300	μA
Total Capacitive Charge *	Q_C	$V_R = 800V$		52		nC
Total Capacitance *	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		590		pF
		$V_R = 400V, T_J = 25^{\circ}C,$ Freq = 1MHz		53		
		$V_R = 800V, T_J = 25^{\circ}C,$ Freq = 1MHz		34		

Note: This is a majority carrier diode, so there is no reverse recovery charge

Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance (per device)	$R_{th(j-c)}$	junction-case		0.5		$^{\circ}C/W$

Note : * Per leg ** Per device

Typical Electrical Curves (Per Leg)

Figure 1. Forward Characteristics

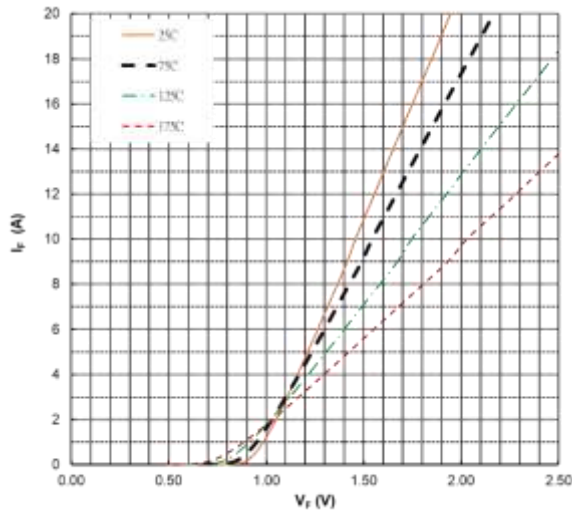


Figure 2. Forward Characteristics

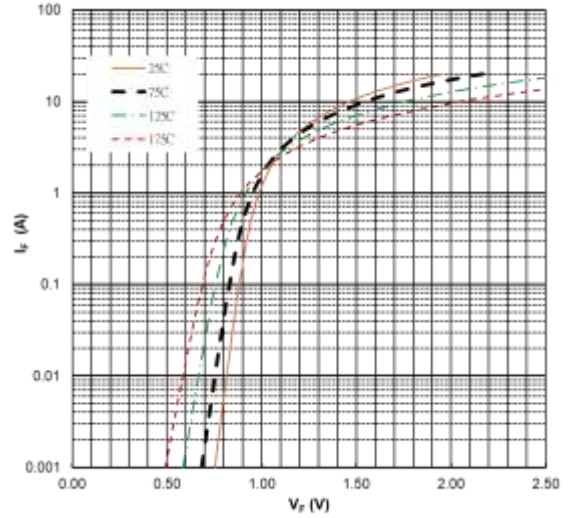


Figure 3. Reverse Characteristics

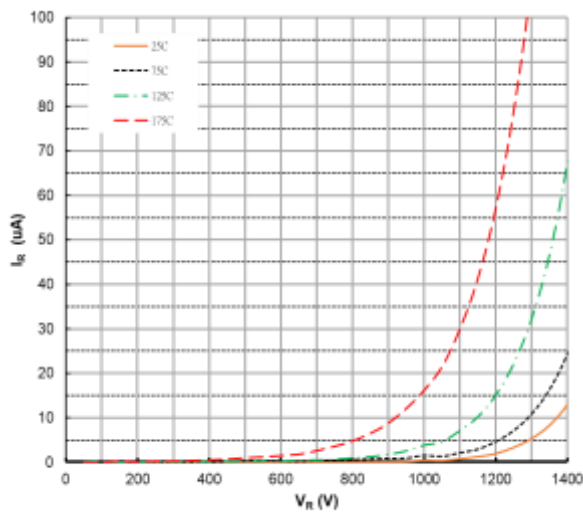


Figure 4. Power Derating

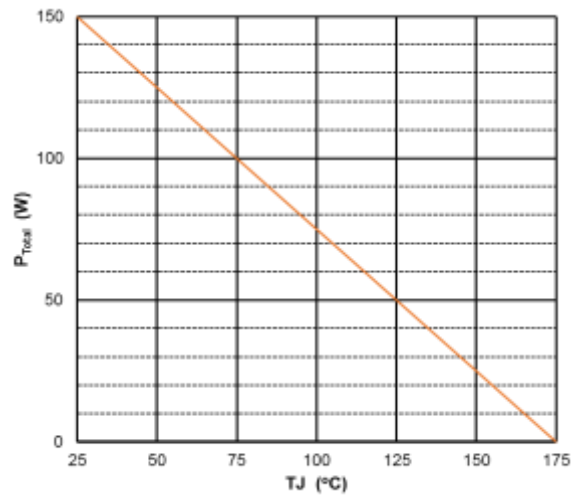


Figure 5. Capacitance vs Reverse Voltage

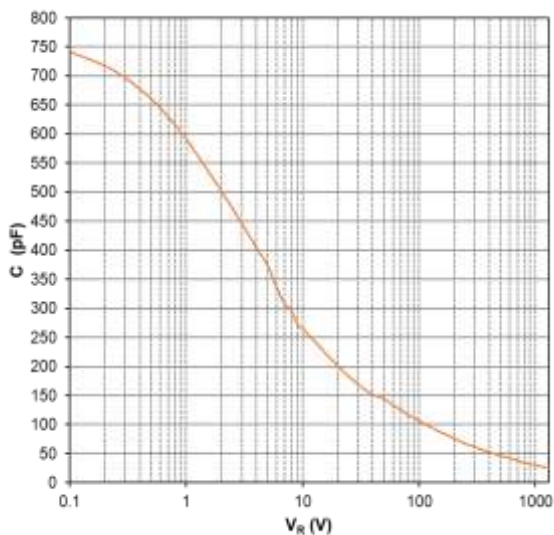
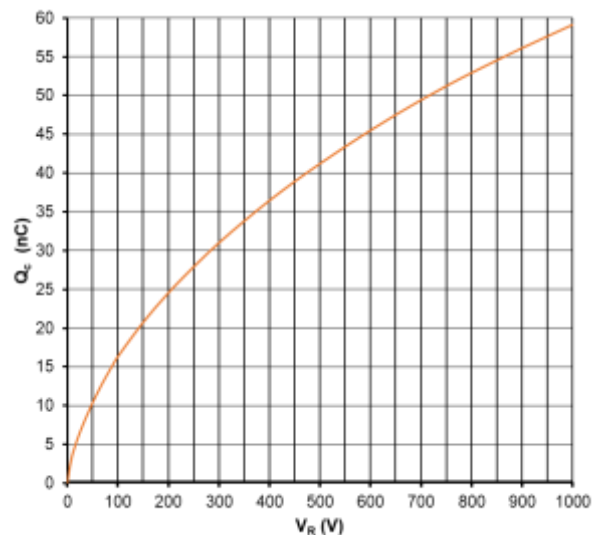


Figure 6. Recovery Charge vs Reverse Voltage



Revision History

Revision	Date	Major Changes since last revision
Version 0.1	18/01/2017	Preliminary datasheet
Version 0.2	07/02/2017	Recenter the AC parameter such as Q_C , C and E_C Add the electrical characteristics curves
Version 0.3	15/05/2017	Revise the surge current value and total power dissipation
Version 0.4	21/01/2018	Update benefits and test conditions of I_{FSM} , I_{FRM} , and P_D ,
Version 0.5	20/03/2018	Update I_F value
Version 0.6	26/04/2018	Update I_{FRM} value
Version 0.7	06/05/2018	Update dv/dt value
Version 0.8	10/08/2018	Update reverse current limits
Version 0.9	10/08/2018	Update Q_C and C values base on ACD10PS120C Update V_F and I_R
Version 1.0	04/10/2018	Update V_F , I_R , C and Q_C with reference to ACD10PS120A(X-fab) datasheet
Version 1.1	12/12/2019	Update C and Q_C with 1MHz measurement and I_{FSM} with reference to ACD10PS120A(X-fab) datasheet