QSD12HCS65U 650V 12A
Homogeneous Current Silicon Carbide Schottky Diode

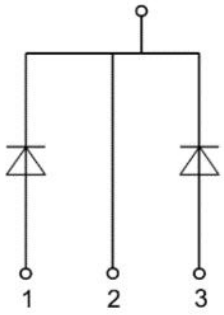
VRRM =	650 V
IF (TC=135 °C) =	18 A
QC =	46 nC

General Description

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

Package

RoHS



Features

- 650V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching

Typical Applications

- Switch Mode Power Supplies (SMPS)
- Power Factor Correction
- Motor Drives

Part Number	Package	Marking
QSD12HSC65U	TO247-3L	Queensland Semi

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Maximum Rated Values (TC=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
VRRM	Repetitive Peak Reverse Voltage	650	V		
VR	DC Peak Reverse Voltage	650	V		
IF(DC)	Forward DC Current	6	A	Per Leg	
		12		Both legs	
IFP	Forward pulse Current	60	A	Per Leg	Note1
		120		Both legs	
IFSM	Non-Repetitive Forward Surge Current	38	A	Per Leg	Note2
		66		Both legs	
Ptot	Power Dissipation	107	W	Per Leg	Note3
		188		Both legs	
TJ	Operating Temperature	-55 to +175	°C		
Tstg	Storage Temperature	-55 to +175	°C		
	TO-247 Mounting Torque	1 8.8	Nm I bf-in	M3 Screw 6-32 Screw	

Note1:t=50μs
Note2:f=50Hz(half-sine wave,t=10ms)
Note3:TC=25°C

Electrical Characteristics (TJ=25°C)

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
VF	Forward Voltage		1.1		V	IF=3A, TJ=25°C	Fig. 1
			1.3	1.6		IF=6A, TJ=25°C	
IR	Reverse Current		0.95	30	μA	VR=650V, TJ=25°C	Fig. 3
			27			VR=650V, TJ=175°C	
QC	Total Capacitive Charge		46		nC	VR=650V,TJ=25°C	Fig. 5
C	Total Capacitance		492		pF	VR=0V, TJ=25°C, f=1MHz	Fig. 4
			62			VR=400V, TJ=25°C, f=1MHz	
			61			VR=650V, TJ=25°C, f=1MHz	

Thermal Characteristics

Symbol	Parameter	Test Condition	Value	Unit	Note
RθJC	Thermal Resistance(Junction to Case)	Per Leg	1.4	°C/W	
		Both Legs	0.8	°C/W	Fig. 6
RθJA	Thermal Resistance(Junction to ambient)	-	29	°C/W	

Typical Performance Characteristics

Figure 1. Forward Characteristics

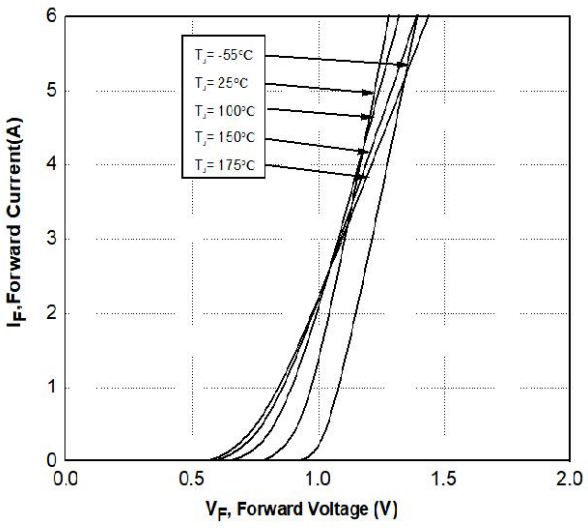


Figure 2. Forward Characteristics

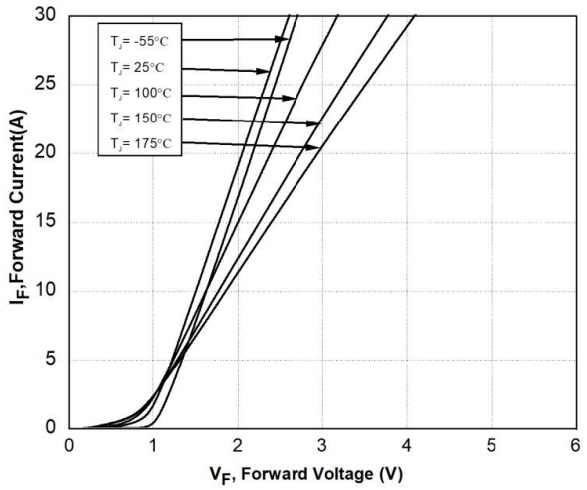


Figure 3.Reverse Characteristics

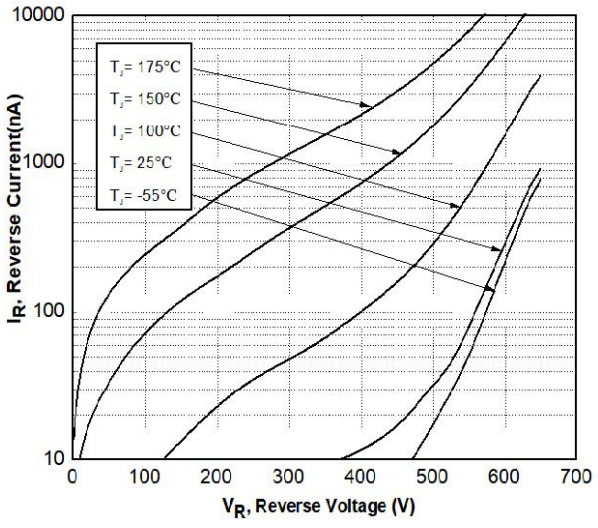


Figure 4.Capacitance Vs. Reverse Voltage

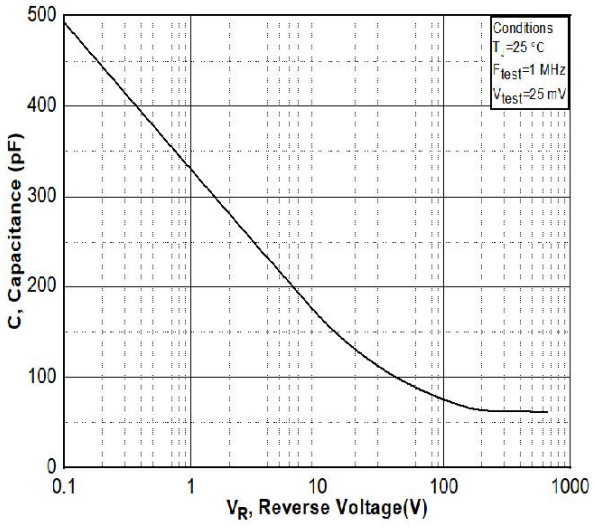


Figure 5. Capacitance Charge Vs. Reverse Voltage

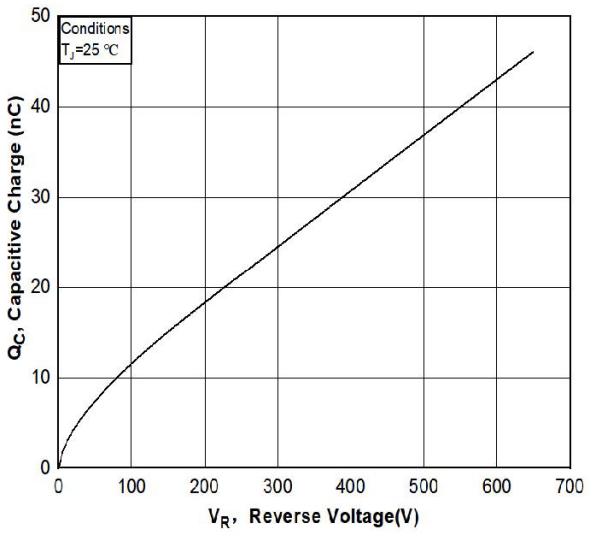
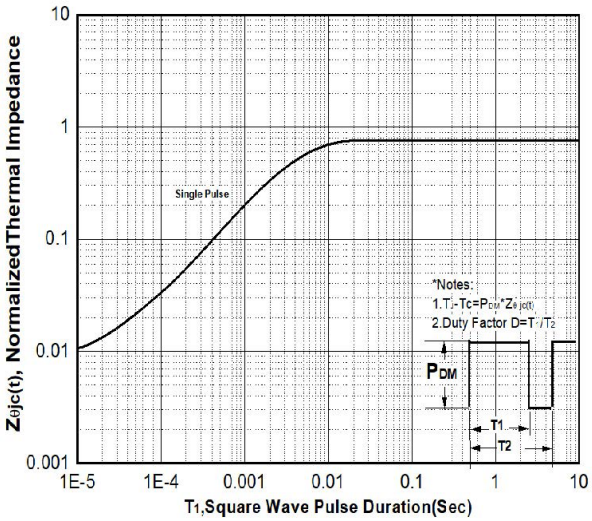


Figure 6. Transient Thermal Response Curve(Junction-to-Case)



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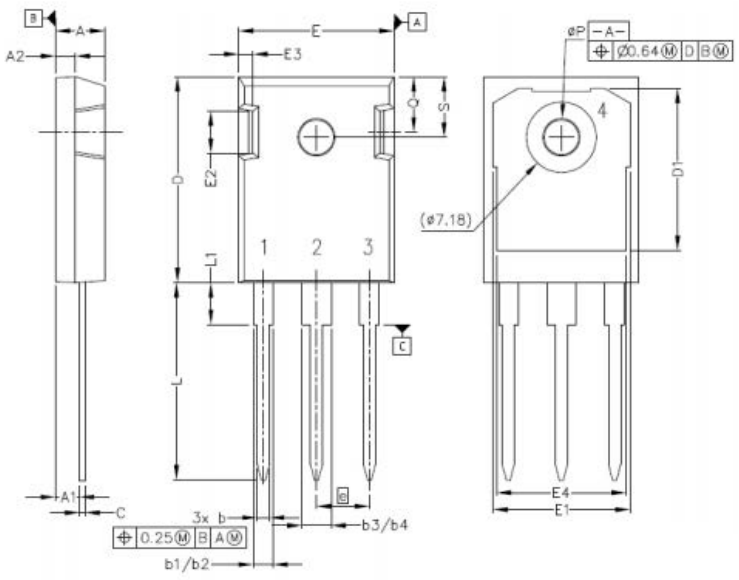
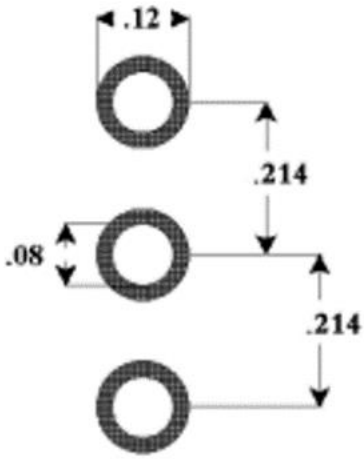
Package Dimensions



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.042	.052	1.07	1.33
b1	.075	.095	1.91	2.41
b2	.075	.085	1.91	2.16
b3	.113	.133	2.87	3.38
b4	.113	.123	2.87	3.13
c	.022	.027	0.55	0.68
D	.819	.831	20.80	21.10
D1	.640	.695	16.25	17.65
D2	.037	.049	0.95	1.25
E	.620	.635	15.75	16.13
E1	.516	.557	13.10	14.15
E2	.145	.201	3.68	5.10
E3	.039	.075	1.00	1.90
E4	.487	.529	12.38	13.43
e	.214 BSC		5.44 BSC	
N	3		3	
L	.780	.800	19.81	20.32
L1	.161	.173	4.10	4.40
ØP	.138	.144	3.51	3.65
Q	.216	.236	5.49	6.00
S	.238	.248	6.04	6.30
T	9°	11°	9°	11°
U	9°	11°	9°	11°
V	2°	8°	2°	8°
W	2°	8°	2°	8°

Package Dimensions



Part Number	Package	Marking
QSD12HSC65U	TO247-3L	Queensland Semi

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