

SuperQ™ Merged Schottky Diode, 300V 1x10A

FEATURES

- Ultra-fast switching with low V_F
- Soft recovery characteristics
- Optimized reverse recovery charge
- Low energy stored
- Ultra-low leakage current

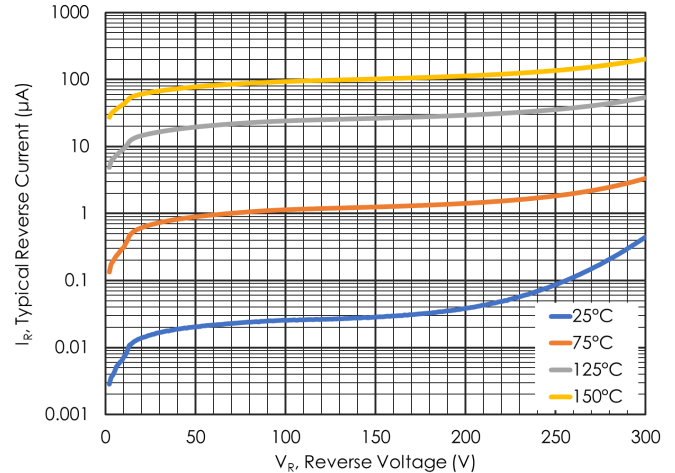
APPLICATIONS

- Output rectification stage of SMPS, UPS and DC/DC converters
- Antiparallel diode for high frequency IGBT
- Freewheeling diode in low voltage inverters
- Recirculation diode on motor chopper drives

PRODUCT DESCRIPTION

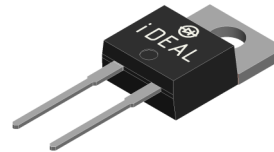
This new generation 300V, 10A merged Schottky diode features ultra-fast switching with low V_F , optimized reverse recovery, ultra-low leakage current and low EOSS.

Parameter $T_A = 25^\circ\text{C}$	Value	Unit
$I_F(\text{AVG})$	1x10	A
V_{RRM}	300	V
$T_J(\text{MAX})$	150	$^\circ\text{C}$
$V_F(\text{MAX})$	1.2	V

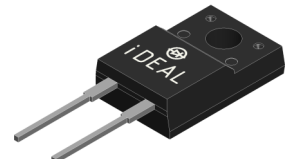


PACKAGING

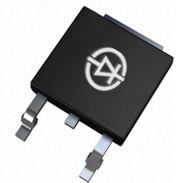
iS30S10DS1P



iS30S10DS1F



iS30S10DS1D



ORDERING INFORMATION

Part Number	Package	Marking	Packaging
iS30S10DS1P	TO-220AC	iS30S10DS1P	TBD
iS30S10DS1F	ITO-220AC	iS30S10DS1F	TBD
iS30S10DS1D	DPAK	iS30S10DS1D	TBD

ABSOLUTE MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

SYMBOL	PARAMETER		VALUE	UNIT
V _{RRM}	Repetitive peak reverse voltage		300	V
I _{F(AVG)}	Average forward current per diode	TO-220 at T _C = 25C	10	A
	Duty Cycle = 50%, square wave	TO-220 at T _C = 105C	10	A
I _{FSM}	Surge non-repetitive forward current	T _P = 10ms sinusoidal	100	A
T _J , T _{STG}	Maximum storage and junction temperature		-55 to +150	C

ELECTRICAL SPECIFICATIONS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_R	Breakdown voltage	$I_R = 100\mu\text{A}$	300			V
I_R	Reverse leakage current	$T_J = 25^\circ\text{C}$		0.44	TBD	μA
		$T_J = 125^\circ\text{C}$		55	TBD	
V_F	Forward voltage drop	$T_J = 25^\circ\text{C}$			1.2	V
		$T_J = 125^\circ\text{C}$		0.90	TBD	

SWITCHING PARAMETERS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
T_{RR}	Reverse recovery time	$T_J = 25^\circ\text{C}$		TBD		ns
		$T_J = 125^\circ\text{C}$		TBD		
Q_{RR}	Reverse recovery charge	$T_J = 25^\circ\text{C}$		TBD		nC
		$T_J = 125^\circ\text{C}$		TBD		
I_{RRM}	Peak recovery current	$T_J = 25^\circ\text{C}$		TBD		A
		$T_J = 125^\circ\text{C}$		TBD		
C_J	Junction capacitance	$T_J = 25^\circ\text{C}$		9.2		pF

THERMAL RESISTANCE PARAMETERS

SYMBOL	PARAMETER	PACKAGE	VALUE	UNIT
$R_{\theta JC}$	Junction to case	TO-220AB	3	$^\circ\text{C/W}$
		ITO-220AB	4	
		TO-252 DPAK	TBD	

Ratings and Characteristics Curves

($T_A = 25^\circ\text{C}$ unless otherwise specified)

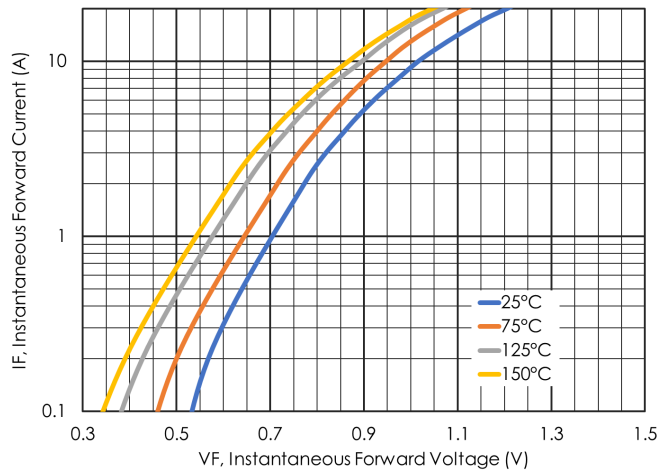


Figure 1: Typical Forward Voltage

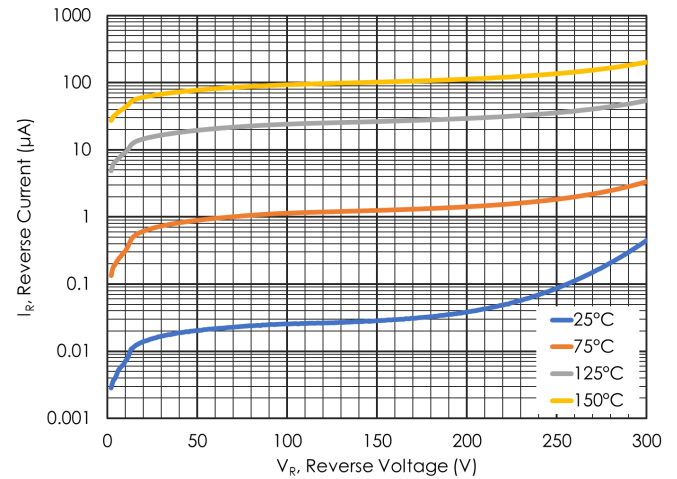


Figure 2: Typical Reverse Current

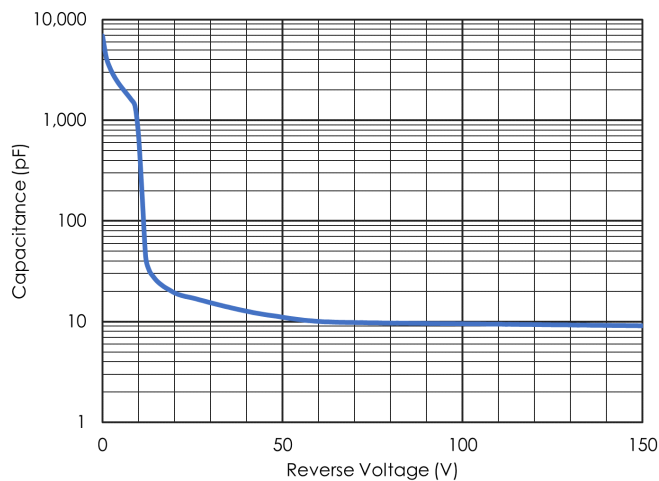
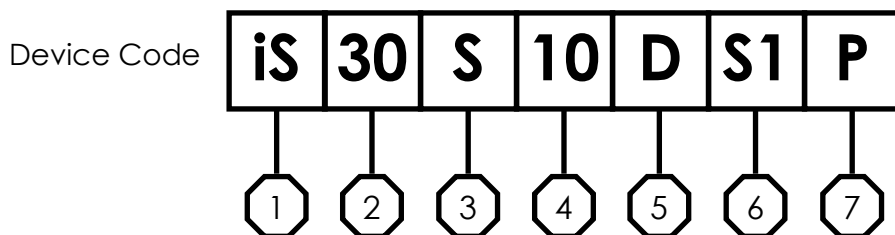


Figure 3: Typical Junction Capacitance

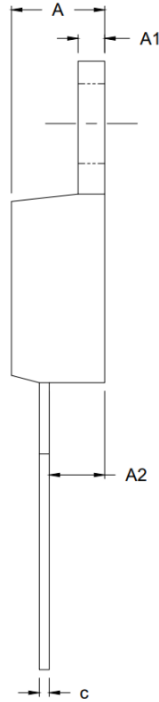
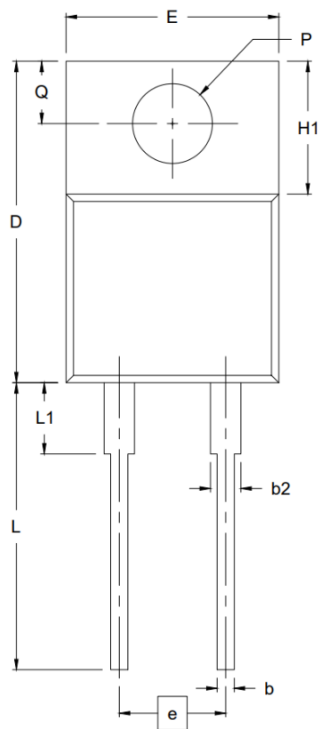
ORDERING INFORMATION TABLE



- 1 — iDEAL Semiconductor product
- 2 — Voltage rating divided by 10 (300V)
- 3 — S = Schottky diode
- 4 — Current rating (10A = 1x10A)
- 5 — D = single diode
- 6 — SuperQ™
- 7 — P = TO-220
F = ITO-220
D = TO-252 DPAK

ORDERING INFORMATION			
Part Number	Package	Marking	Packaging
iS30S10DS1P	TO-220AC	iS30S10DS1P	TBD
iS30S10DS1F	ITO-220AC	iS30S10DS1F	TBD
iS30S10DS1D	TO-252 DPAK	iS30S10DS1D	TBD

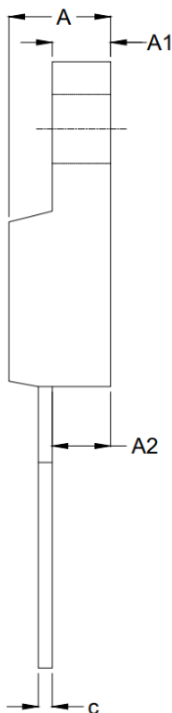
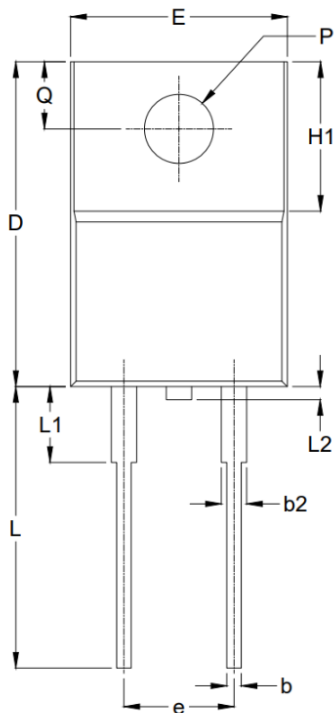
TO-220 AC



SYMBOL	MIN	MAX
A	4.19	4.82
A1	1.14	1.40
A2	2.38	2.92
b	0.63	1.01
b2	1.13	1.78
c	0.31	0.64
D	14.22	16.51
E	9.66	10.66
e	5.08 BSC	
H1	5.85	6.85
L	12.70	14.73
L1	2.39	4.42
P	3.54	4.08
Q	2.54	3.42

Notes:
 1. All linear dimensions in millimeters
 2. Dimensions D and E do not include mold flash or protrusions

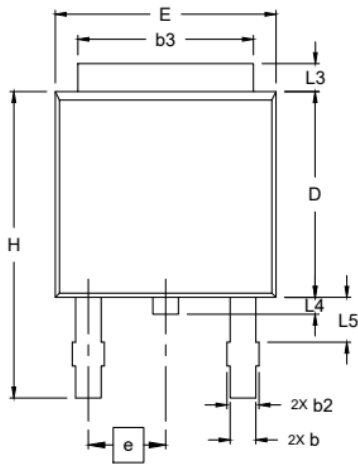
ITO-220 AC



SYMBOL	MIN	MAX
A	4.30	4.90
A1	2.50	3.44
A2	2.56	2.96
b	0.50	0.84
b2	0.99	1.35
c	0.49	0.79
D	14.70	16.07
E	9.70	10.31
e	5.08	
H1	6.70	7.10
L	12.50	13.50
L1	----	3.50
L2	----	0.50
P	2.98	3.40
Q	2.70	3.50

Notes:
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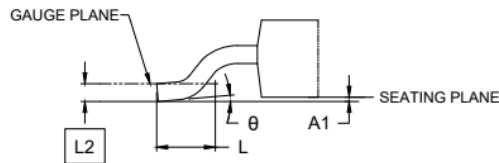
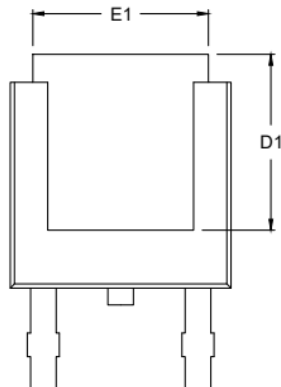
TO-252 DPAK



SYMBOL	MIN	MAX
A	2.18	2.39
A1	--	0.13
b	0.63	0.89
b2	0.76	1.14
b3	4.95	5.46
c	0.46	0.61
c2	0.46	0.89
D	5.97	6.22
D1	5.21	--
E	6.35	6.73
E1	4.32	--
e	2.29 BSC	
H	9.40	10.41
L	1.40	1.78
L2	0.51 BSC	
L3	0.89	1.27
L4	--	1.02
L5	1.14	1.52
θ	0°	10°

Notes:

1. All linear dimensions in millimeters
2. Dimensions D, D1 and E do not include mold flash or protrusions



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Product Status

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