

Surface Mount Ultra Fast Recovery Rectifier

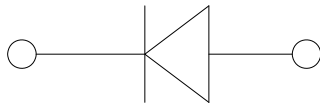


Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.



Mechanical Data

- **Package:** DO-214AC (SMA)
Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

■Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	UG1A	UG1B	UG1C	UG1D	UG1F	UG1G	UG1H	UG1J
Device marking code			UG1A	UG1B	UG1C	UG1D	UG1F	UG1G	UG1H	UG1J
Maximum Repetitive Peak Reverse Voltage	VRRM	V	50	100	150	200	300	400	500	600
Maximum RMS Voltage	VRMS	V	35	70	105	140	210	280	350	420
Maximum DC blocking Voltage	VDC	V	50	100	150	200	300	400	500	600
Average rectified output current @60Hz sine wave, resistance load, TL (Fig.1)	IO	A	1.0							
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave, 1 cycle, Tj=25°C	IFSM	A	30							
Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25°C			60							
Current squared time @1ms≤t≤8.3ms Tj=25°C	I²t	A²s	3.735							
Storage temperature	Tstg	°C	-55 ~ +150							
Junction temperature	Tj	°C	-55 ~ +150							

■Electrical Characteristics (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	UG1A	UG1B	UG1C	UG1D	UG1F	UG1G	UG1H	UG1J
Maximum instantaneous forward voltage	V _F	V	I _{FM} =1.0A	0.92				1.25		1.7	
Maximum reverse recovery time	t _{rr}	ns	I _F =0.5A, I _R =1.0A, I _{rr} =0.25A	25						35	
Maximum DC reverse current at rated DC blocking voltage	I _R	μA	T _J =25°C	5							
			T _J =125°C	50							
Typical junction capacitance	C _j	pF	Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C	17				15		16	

UG1A THRU UG1J

■Dynamic Characteristics

◆ UG1A THRU UG1D

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$, $di/dt=-50\text{A/us}$ $V_{RM}=30\text{V}$	-	27	-
			$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$ $di/dt=-200\text{A/us}$ $V_{RM}=100\text{V}$	-	18	-
			$T_j=125^{\circ}\text{C}$		-	24	-
Peak recovery current	I_{RRM}	A	$T_j=25^{\circ}\text{C}$		-	2.4	-
			$T_j=125^{\circ}\text{C}$		-	3.9	-
Reverse recovery charge	Q_{rr}	nC	$T_j=25^{\circ}\text{C}$		-	21.6	-
			$T_j=125^{\circ}\text{C}$		-	46.6	-
Non-repetitive avalanche energy	E_{AS}	mJ	$T_j=25^{\circ}\text{C}$	$I_R=1.5\text{A}$, $L=15\text{mH}$	16.9	-	-

◆ UG1F THRU UG1G

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$, $di/dt=-50\text{A/us}$ $V_{RM}=30\text{V}$	-	26	-
			$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$ $di/dt=-200\text{A/us}$ $V_{RM}=200\text{V}$	-	22	-
			$T_j=125^{\circ}\text{C}$		-	31	-
Peak recovery current	I_{RRM}	A	$T_j=25^{\circ}\text{C}$		-	1.9	-
			$T_j=125^{\circ}\text{C}$		-	3.5	-
Reverse recovery charge	Q_{rr}	nC	$T_j=25^{\circ}\text{C}$		-	21.1	-
			$T_j=125^{\circ}\text{C}$		-	54.9	-
Non-repetitive avalanche energy	E_{AS}	mJ	$T_j=25^{\circ}\text{C}$	$I_R=0.4\text{A}$, $L=15\text{mH}$	1.2	-	-

◆ UG1H THRU UG1J

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$, $di/dt=-50\text{A/us}$ $V_{RM}=30\text{V}$	-	38	-
			$T_j=25^{\circ}\text{C}$	$I_F=1\text{A}$ $di/dt=-200\text{A/us}$ $V_{RM}=400\text{V}$	-	32	-
			$T_j=125^{\circ}\text{C}$		-	52	-
Peak recovery current	I_{RRM}	A	$T_j=25^{\circ}\text{C}$		-	2.9	-
			$T_j=125^{\circ}\text{C}$		-	4.7	-
Reverse recovery charge	Q_{rr}	nC	$T_j=25^{\circ}\text{C}$		-	45.8	-
			$T_j=125^{\circ}\text{C}$		-	121.9	-
Non-repetitive avalanche energy	E_{AS}	mJ	$T_j=25^{\circ}\text{C}$	$I_R=0.3\text{A}$, $L=15\text{mH}$	0.7	-	-

■Thermal Characteristics ($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	UG1A	UG1B	UG1C	UG1D	UG1F	UG1G	UG1H	UG1J
Typical Thermal resistance	$R_{\theta J-A}^{(1)}$	$^{\circ}\text{C/W}$	70							
	$R_{\theta J-L}^{(1)}$		25							
	$R_{\theta J-C}^{(1)}$		20							

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

UG1A THRU UG1J

■ Characteristics (Typical)

FIG.1: Io-TL Cure

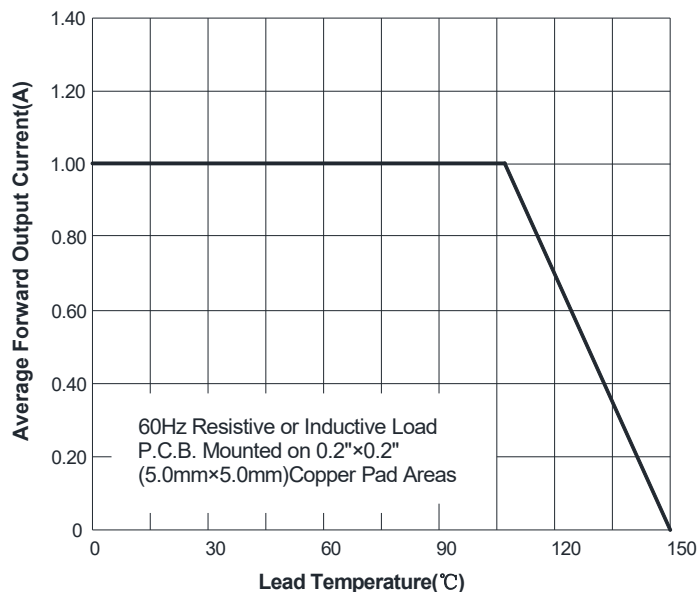


FIG.2: Forward Surge Current Capability

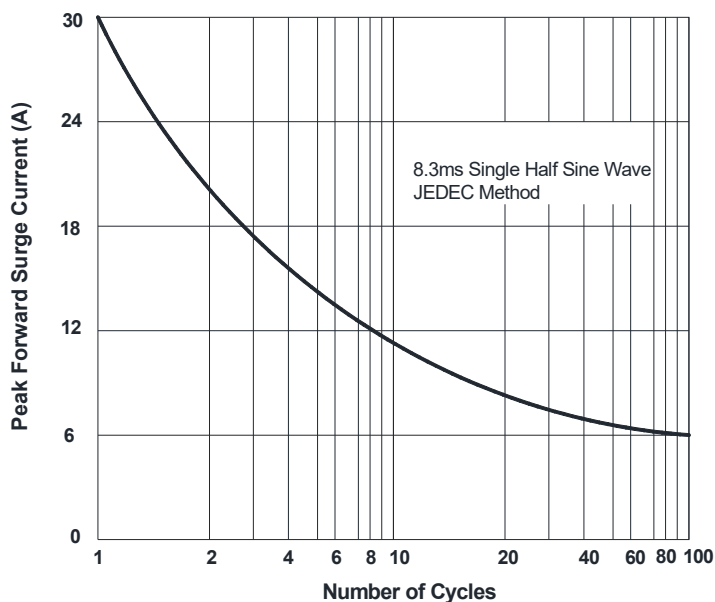


FIG.3: Typical Forward Characteristics

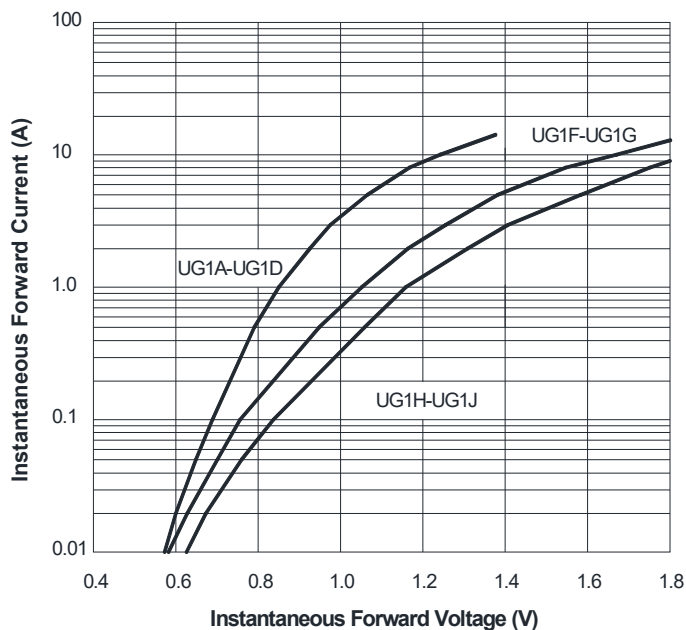


FIG.4: Typical Reverse Characteristics

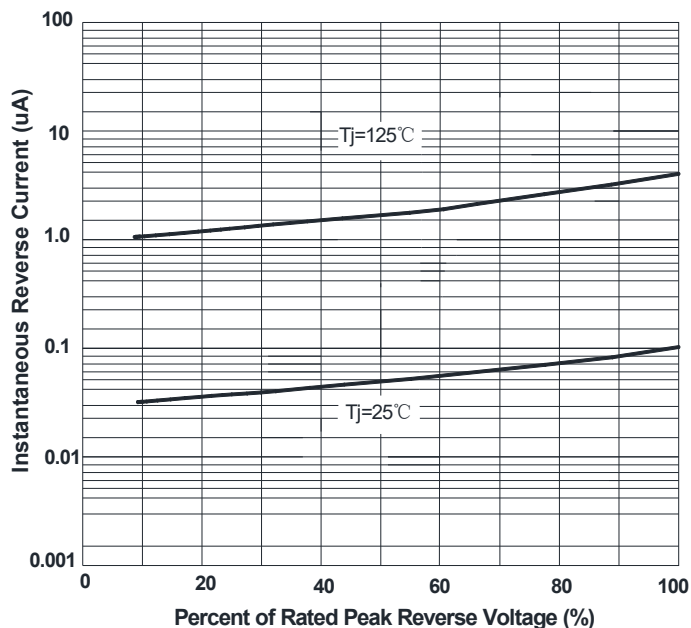
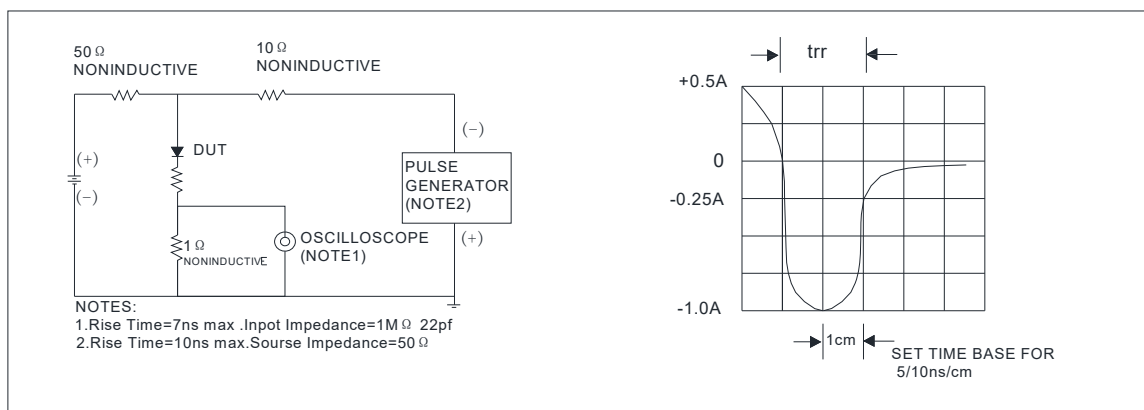


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time

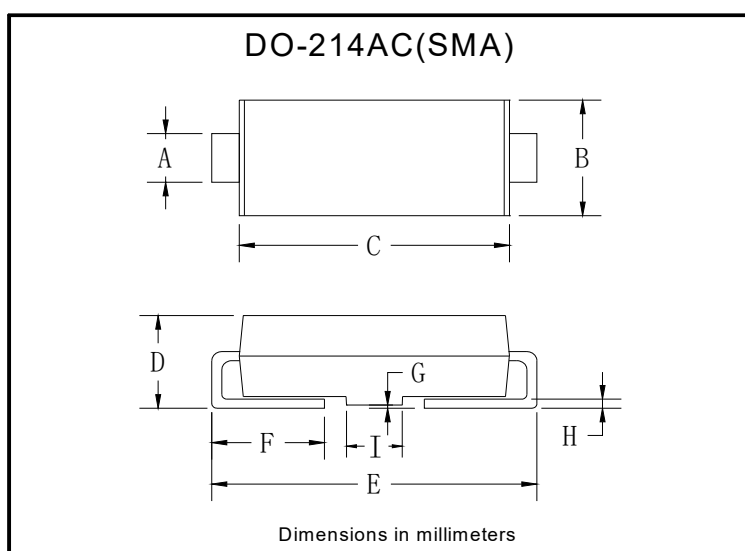


UG1A THRU UG1J

■ Ordering Information (Example)

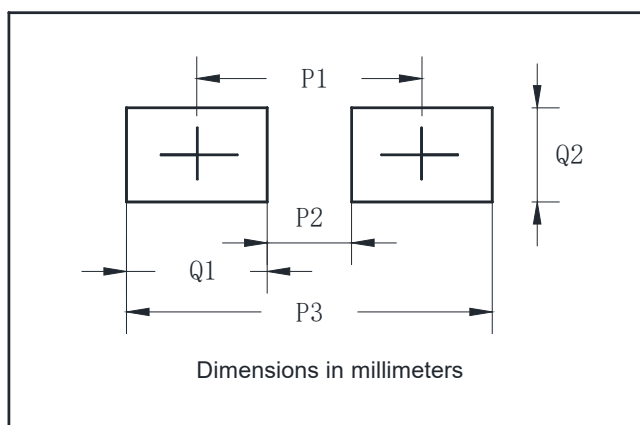
PREFERRED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
UG1A- UG1J	F1	Approximate 0.059	5000	/	80000	13" reel
UG1A- UG1J	F2	Approximate 0.059	7500	/	120000	13" reel
UG1A- UG1J	F3	Approximate 0.059	7500	/	60000	13" reel
UG1A- UG1J	F4	Approximate 0.059	1800	14400	57600	7" reel
UG1A- UG1J	F5	Approximate 0.059	2000	16000	64000	7" reel
UG1A- UG1J	F6	Approximate 0.059	5000	/	100000	13" reel

■ Outline Dimensions



DO-214AC(SMA)		
Dim	Min	Max
A	1.25	1.58
B	2.40	2.83
C	4.00	4.75
D	1.90	2.30
E	4.93	5.28
F	0.76	1.41
G	0.05	0.20
H	0.15	0.31
I	1.70	2.10

■ Suggested Pad Layout



DO-214AC(SMA)	
Dim	Millimeters
P1	4.00
P2	1.50
P3	6.50
Q1	2.50
Q2	1.70

Disclaimer

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