

# High-reliability discrete products and engineering services since 1977

## 2N6151-2N6153

### SILICON BIDIRECTIONAL THYRISTORS

#### **FEATURES**

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

### **MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Repetitive Peak Off-Stage Voltage, Gate Open			
2N6151	V <sub>DRM</sub>	200	Volts
2N6152	V DRM	400	VOILS
2N6153		600	
RMS On-State Current (T <sub>C</sub> = 80°C)	I <sub>T(RMS)</sub>	10	Amps
Peak Non-Repetitive Surge Current (One Cycle, 60Hz)	I <sub>TSM</sub>	100	Amps
Circuit Fusing Considerations	l <sup>2</sup> t		A <sup>2</sup> s
(t = 8.3ms)	1-1	60	A-S
Peak Gate Power (T <sub>J</sub> = 75°C, pulse width = 2.0μs)	P <sub>GM</sub>	20	Watts
Average Gate Power (T <sub>J</sub> = 75°C, t = 8.3ms)	P <sub>G(AV)</sub>	0.5	Watts
Peak Gate Current (pulse width = 10μs)	Ідм	2.0	Amps
Peak Gate Voltage	V <sub>GM</sub>	10	Volts
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +100	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit	
Thermal Resistance, Junction To Case	Rejc	2.0	°C/W	
Thermal Resistance, Case To Ambient	R <sub>OCA</sub>	50	°C/W	

### **ELECTRICAL CHARACTERISTICS** (T<sub>C</sub> = 25°C and either polarity of MT2 to MT1 voltage unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
Peak Off State Current					
(V <sub>D</sub> = V <sub>DRM</sub> , gate open)					mA
$T_C = 25^{\circ}C$	I <sub>DRM</sub>	-	-	0.1	IIIA
$T_C = 100^{\circ}C$		-	-	0.5	
Peak On-State Voltage	V <sub>TM</sub>				Volts
$(I_{TM} = 14A \text{ peak, pulse width} \le 1 \text{ ms, duty cycle} \le 2\%)$	VIM	-	-	1.65	VOILS
Critical Rate Of Rise Of Off-State Voltage	dv/dt				1////
$(V_D$ = Rated $V_{DRM}$ , gate open, exponential waveform, $T_C$ = 100°C)	dv/dt	-	50	-	V/µs
Critical Rate Of Rise Of Commutating Voltage					
( $I_{T(RMS)}$ = Rated $I_{T(RMS)}$ , $V_D$ = Rated $V_{DRM}$ , commutating di/dt = 5.4A/ms, gate open, $T_C$ = 80°C)	dv/dt(c)	4	-	-	V/µs
DC Gate Trigger Current (continuous dc)					
(V <sub>D</sub> = 12V, trigger mode)					
MT2(+), G(+); MT2(-), G(-); $R_L = 100\Omega$	I <sub>GT</sub>	-	-	50	mA
MT2(+), G(-); $R_L = 50\Omega$	IGT	-	-	50	IIIA
MT2(+), G(+); MT2(-), G(-); $R_L = 50\Omega$ , $T_C = -40^{\circ}C$		-	-	80	
MT2(+), G(-); $R_L = 25\Omega$ , $T_C = -40^{\circ}C$		-	-	80	



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### **ELECTRICAL CHARACTERISTICS** (T<sub>C</sub> = 25°C and either polarity of MT2 to MT1 voltage unless otherwise noted)

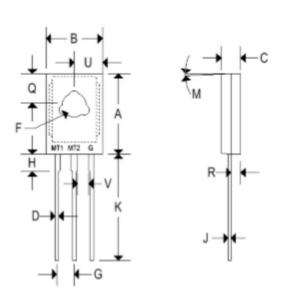
Characteristic	Symbol	Min	Тур	Max	Unit
DC Gate Trigger Voltage (continuous dc)	$V_{GT}$				Volts
(V <sub>D</sub> = 12V, trigger mode)					
MT2(+), G(+); MT2(-), G(-); $R_L$ = 100Ω		-	-	2.5	
MT2(+), $G(-)$ ; $R_L = 50\Omega$		-	-	2.5	
MT2(+), G(+); MT2(-), G(-); $R_L = 50\Omega$ , $T_C = -40^{\circ}C$		-	-	3.5	
MT2(+), G(-); $R_L = 25\Omega$ , $T_C = -40^{\circ}C$		-	-	3.5	
$(V_D = Rated \ V_{DRM}, \ R_L = 1000\Omega, \ T_C = 100^{\circ}C)$ all polarities		0.2	-	-	
Holding Current	lμ				mA
$(V_D = 24V, I_T = 0.5A, pulse width = 1ms, duty cycle \le 2\%,$					
gate trigger source 7V, $20\Omega$ )					
$T_C = 25^{\circ}C$		-	-	50	
$T_C = -40^{\circ}C$		-	-	100	
Latching Current	IL.				mA
$(V_D = 24V)$					
Trigger source: 15V, $100\Omega$ , trigger mode)					
MT2(+), G(+); MT2(-), G(-)		-	-	100	
MT2(+), G(-)		-	-	200	
MT2(+), G(+); MT2(-), G(-), $T_c = -40^{\circ}C$		-	-	200	
MT2(+), G(-), T <sub>c</sub> = -40°C		-	-	400	



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#### MECHANICAL CHARACTERISTICS

Case	TO-127
Marking	Alpha-numeric
Pin out	See below



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	TO-127			
į į	Inc	Inches		neters
	Min	Max	Min	Max
Α	0.635	0.645	16.130	16.380
В	0.495	0.505	12.570	12.830
С	0.125	0.135	3.180	3.430
D	0.043	0.049	1.090	1.240
F	0.138	0.148	3.510	3.760
G	0.166	0.166 BSC 4.220 BSC		BSC
Н	0.105	0.115	2.670	2.920
J	0.032	0.034	0.813	0.864
K	0.595	0.645	15.110	16.380
М	9° 1	ΓΥΡ	9° 1	ΓΥΡ
Q	0.185	0.195	4.700	4.950
R	0.075	0.085	1.910	2.160
U	0.245	0.255	6.220	6.480
٧	0.080	-	2.030	-

