Dual Integrated Circuit N-Channel/PN Duals

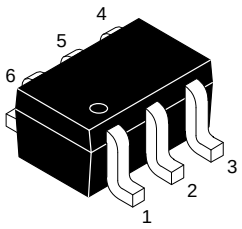
FEATURES:

- Energy Efficient
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

APPLICATIONS:

- Low Side Load Switch
- Level Shift Circuits
- DC−DC Converter

Circuit Diagram & Pin Configuration:



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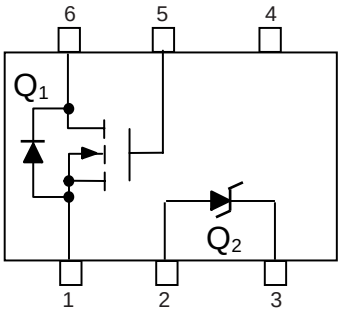


DEVICE MARKING AND ORDERING INFORMATION

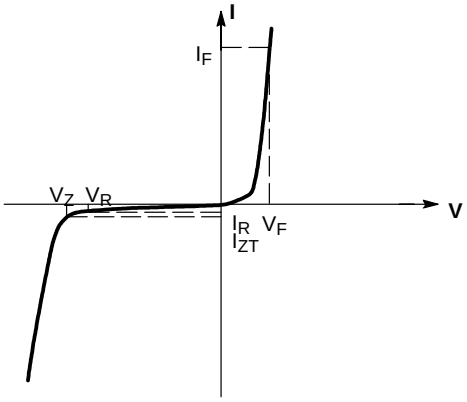
Device	Marking	Shipping
BSS138V3.3-S03T	H02	3000/Tape&Reel

MAXIMUM RATING

Rating	Symbol	Value	Unit
Drain–to–Source Voltage	V_{DSS}	50	Vdc
Gate–to–Source Voltage – Continuous	V_{GS}	± 20	Vdc
Drain Current – Continuous @ T_A = 25°C – Pulsed Drain Current ($t_p \le 10$ μs)	 I_D I_{DM}	 200 800	mA
Total Power Dissipation @ T_A = 25°C	P_D	225	mW
Operating and Storage Temperature Range	T_J, T_{stg}	– 55 to 150	°C
Thermal Resistance – Junction–to–Ambient	$R_{\theta JA}$	556	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (Q2)
(T_A = 25°C unless otherwise noted,
V_F = 0.9 V Max. @ I_F = 10 mA for all types)

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F
ΘV_Z	Maximum Temperature Coefficient of V_Z
C	Max. Capacitance @V_R = 0 and f = 1 MHz



Zener Voltage Regulator

ELECTRICAL CHARACTERISTICS(Q1) (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–to–Source Breakdown Voltage (V_{GS} = 0 Vdc, I_D = 250 μAdc)		$V_{(BR)DSS}$	50	–	–	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 25 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 50 Vdc, V_{GS} = 0 Vdc)		I_{DSS}	– –	– –	0.1 0.5	μAdc
Gate–Source Leakage Current (V_{GS} = ± 20 Vdc, V_{DS} = 0 Vdc)		I_{GSS}	–	–	±0.1	μAdc
ON CHARACTERISTICS (Note 1.)						
Gate–Source Threshold Voltage (V_{DS} = V_{GS}, I_D = 1.0 mAdc)		$V_{GS(th)}$	0.5	–	1.5	Vdc
Static Drain–to–Source On–Resistance (V_{GS} = 2.75 Vdc, I_D < 200 mAdc, T_A = –40°C to +85°C) (V_{GS} = 5.0 Vdc, I_D = 200 mAdc)		$r_{DS(on)}$	– –	5.6 –	10 3.5	Ohms
Forward Transconductance (V_{DS} = 25 Vdc, I_D = 200 mAdc, f = 1.0 kHz)		g_{fs}	100	–	–	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 25 Vdc, V_{GS} = 0, f = 1 MHz)	C_{iss}	–	40	50	pF
Output Capacitance	(V_{DS} = 25 Vdc, V_{GS} = 0, f = 1 MHz)	C_{oss}	–	12	25	
Transfer Capacitance	(V_{DG} = 25 Vdc, V_{GS} = 0, f = 1 MHz)	C_{rss}	–	3.5	5.0	
SWITCHING CHARACTERISTICS (Note 2.)						
Turn–On Delay Time	(V_{DD} = 30 Vdc, I_D = 0.2 Adc,)	$t_{d(on)}$	–	–	20	ns
Turn–Off Delay Time		$t_{d(off)}$	–	–	20	

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperature.

ELECTRICAL CHARACTERISTICS(Q2) (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Zener Voltage @ **I_{ZT} =5mA**	**V_Z (Volts)**	3.1	3.3	3.5	V
Maximum Zener Impedance @ **I_{ZT} =5mA**	**Z_{ZT}**			95	**Ω**
Maximum Zener Impedance @ **I_{ZK} =0.5mA**	**Z_{ZK}**			1000	**Ω**
Reverse Leakage Current @ **V_R =1.0V**	**I_R**			5	**μA**
Forward Voltage @ **I_F =10mA**	**V_F**			0.9	V
Maximum Temperature Coefficient of V_Z **I_{ZT} =5mA**	**ΘV_Z**	–3.5		0	**mV/k**
Max. Capacitance @ **V_R = 0,f = 1 MHz**	**C**		450		**pF**

2. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.

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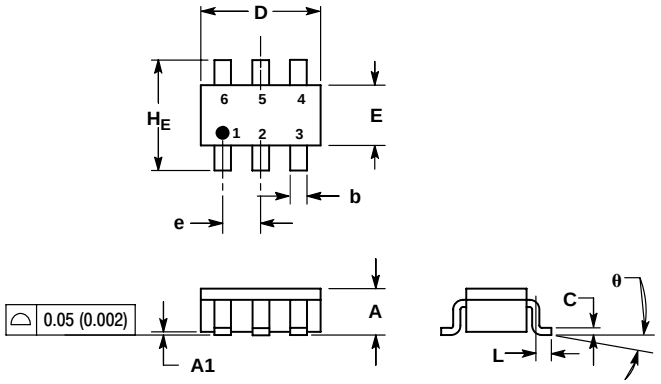
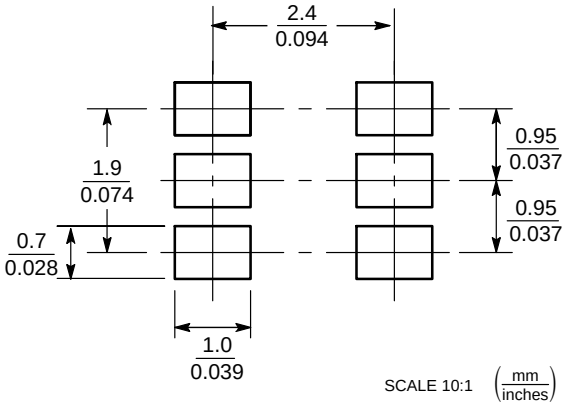


DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	1.00	1.10	0.035	0.039	0.043
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.25	0.37	0.50	0.010	0.015	0.020
c	0.10	0.18	0.26	0.004	0.007	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
E	1.30	1.50	1.70	0.051	0.059	0.067
e	0.85	0.95	1.05	0.034	0.037	0.041
L	0.20	0.40	0.60	0.008	0.016	0.024
H_E	2.50	2.75	3.00	0.099	0.108	0.118
θ	0°	–	10°	0°	–	10°



NOTICE

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