

Dual Integrated Circuit

N-Channel/PN Duals

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

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			mA
– Continuous @ $T_A = 25^\circ\text{C}$	I_D	200	
– Pulsed Drain Current ($t_p \leq 10 \mu\text{s}$)	I_{DM}	800	
Total Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	225	mW
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	$^\circ\text{C}$

ORDERING INFORMATION

Device	Marking	Shipping
LBSS138V3.3T1G S-LBSS138V3.3T1G	H02	3000/Tape&Reel
LBSS138V3.3T3G S-LBSS138V3.3T3G	H02	10000/Tape&Reel

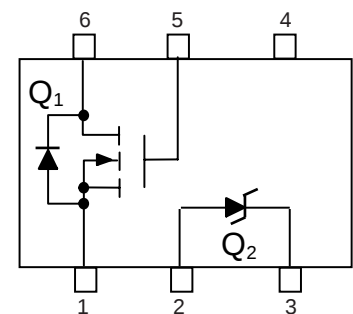
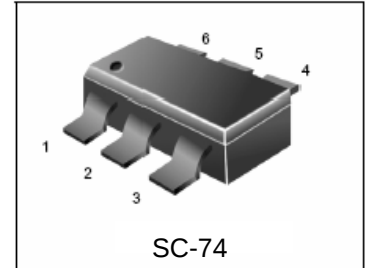
ELECTRICAL CHARACTERISTICS (Q2)

($T_A = 25^\circ\text{C}$ unless otherwise noted,

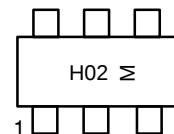
$V_F = 0.9 \text{ V Max. @ } I_F = 10 \text{ mA}$ for all types)

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 $f = 1 \text{ MHz}$

LBSS138V3.3T1G
S-LBSS138V3.3T1G

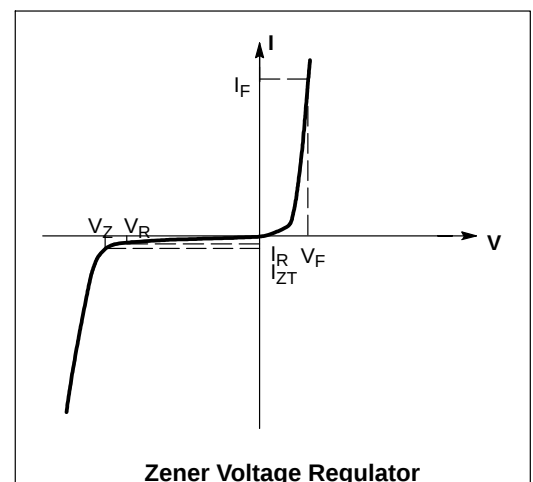


MARKING DIAGRAM



H02 = Device Code

M = Month Code



LBSS138V3.3T1G , S-LBSS138V3.3T1G

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 _{DS} = 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.

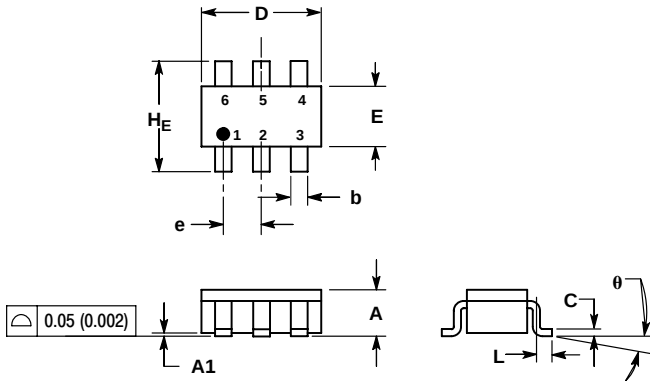
ELECTRICAL CHARACTERISTICS(Q2) (T_A = 25°C unless otherwise noted)

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.

LBSS138V3.3T1G , S-LBSS138V3.3T1G

SC-74



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
HE	2.50	2.75	3.00	0.099	0.108	0.118
θ	0°	-	10°	0°	-	10°

