3RZHU 7UDQVLVWRU

Product Summary

V_{DS}	40	V
$R_{DS(on),max}$	5.4	m:
I_D	81	A

PG-TDSON-8

Features

-)DVW VZLWFKLQJ 026)(7 IRU 6036
- 2SWLPL]HG WHFKQRORJ\ IRU '&/'&
- 4XDOLILHG DFFRUGLQJ WR -('(& [1] for target applications
- 1-FKDQQHO; 1RUPDO OHYHO
- ([FHOOHQW JDWH FKDUJH [Q] product (FOM)
- 9HU\ ORZ RQ-UHVLVWDQFH
- 6XSHULRU WKHUPDO UHVLVWDQFH
- 100% $YDODQFKH UDWHG
- 3E-IUHH SODWLQJ; 5R+6 FRPSOLDQW
- +DORJHQ-IUHH DFFRUGLQJ WR ,(&61249-2-21

Type	Package	Marking
BSC054N04NS G	PG-TDSON-8	054N04NS

Maximum ratings, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	V_{GS}=10 V, T_C=25 °C	81	A
		V_{GS}=10 V, T_C=100 °C	52	
		V_{GS}=10 V, T_A=25 °C, R_{thJA}=50 K/W[2]	17	
Pulsed drain current[3]	$I_{D,pulse}$	T_C=25 °C	324	
Avalanche current, single pulse[4]	I_{AS}	T_C=25 °C	50	
Avalanche energy, single pulse	E_{AS}	I_D=50 A, R_{GS}=25 :	35	mJ
Gate source voltage	V_{GS}		±20	V

[1] J-STD20 and JESD22

Maximum ratings, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Power dissipation	P_{tot}	T_C=25 °C	57	W
		T_A=25 °C, R_{thJA}=50 K/W[2)]	2.5	
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	°C
IEC climatic category; DIN IEC 68-1			55/150/56	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - case	R_{thJC}	bottom	-	-	2.2	K/W
		top	-	-	20	
Device on PCB	R_{thJA}	6 cm^2 cooling area[2)]	-	-	50	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=1 mA	40	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=27 µA	2	-	4	
Zero gate voltage drain current	I_{DSS}	V_{DS}=40 V, V_{GS}=0 V, T_j=25 °C	-	0.1	1	µA
		V_{DS}=40 V, V_{GS}=0 V, T_j=125 °C	-	10	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10 V, I_D=50 A	-	4.5	5.4	m :
Gate resistance	R_G		-	1.5	-	:
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=50 A	34	67	-	S

[2)] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm^2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

[3)] See figure 3 for more detailed information

[4)] See figure 13 for more detailed information

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Dynamic characteristics						
Input capacitance	C_{iss}		-	2100	2800	pF
Output capacitance	C_{oss}		-	620	820	
Reverse transfer capacitance	C_{rss}		-	22	-	
Turn-on delay time	$t_{d(on)}$		-	11	-	ns
Rise time	t_r		-	2.6	-	
Turn-off delay time	$t_{d(off)}$					

1 Power dissipation

$P_{tot}=f(T_C)$

2 Drain current

$I_D=f(T_C)$; $V_{GS} \geq 10$ 9

3 Safe operating area

$I_D=f(V_{DS})$; $T_C=25$ °C; $D=0$

parameter: t_p

4 Max. transient thermal impedance

$Z_{thJC}=f(t_p)$

parameter: $D=t_p/T$

5 Typ. output characteristics

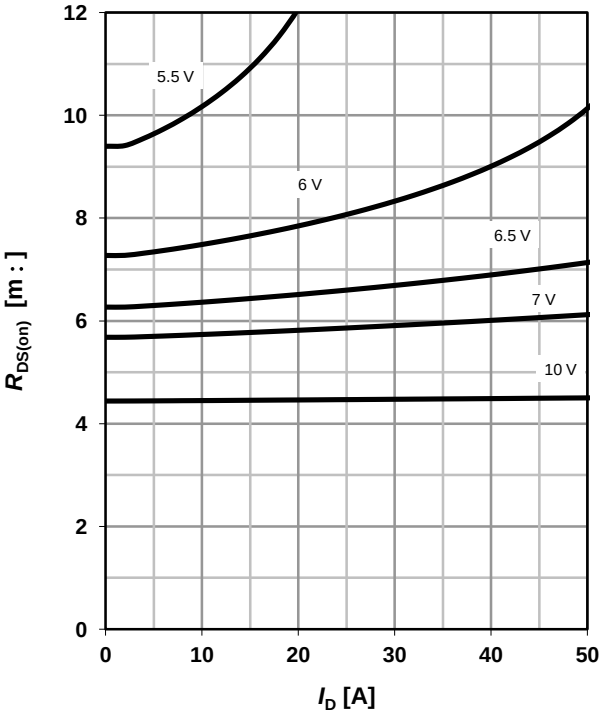
$I_D=f(V_{DS})$; $T_j=25$ °C

parameter: V_{GS}

6 Typ. drain-source on resistance

$R_{DS(on)}=f(I_D)$; $T_j=25$ °C

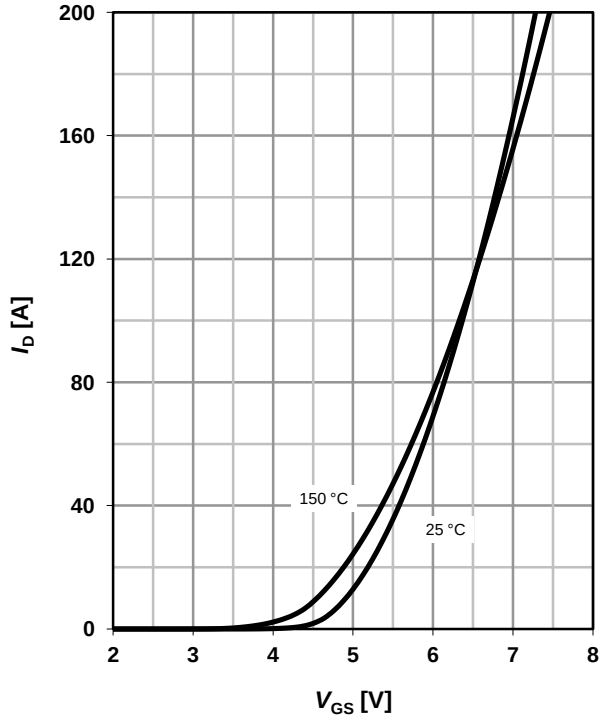
parameter: V_{GS}



7 Typ. transfer characteristics

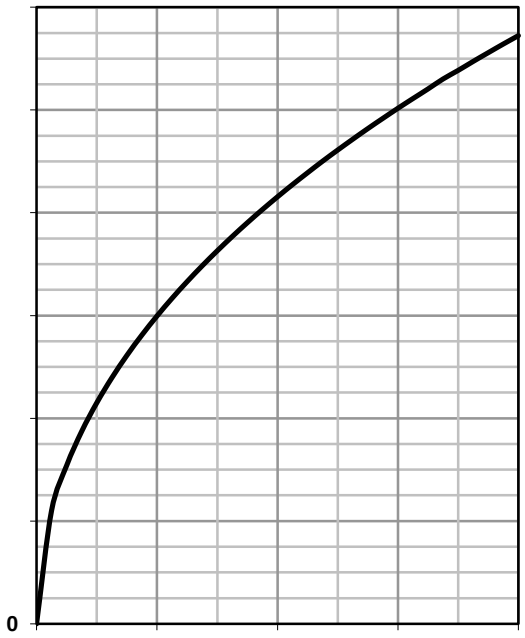
$I_D=f(V_{GS})$; $|V_{DS}|>2|I_D|R_{DS(on)max}$

parameter: T_j



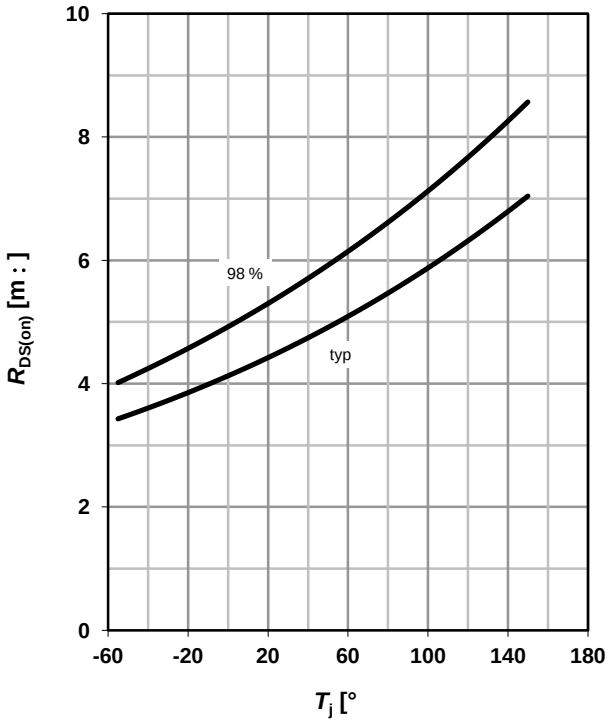
8 Typ. forward transconductance

$g_{fs}=f(I_D)$; $T_j=25$ °C



9 Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; $I_D=50$ A; $V_{GS}=10$ V



10 Typ. gate threshold voltage

$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; $I_D=27$ µA

11 Typ. capacitances

$C=f(V_{DS})$; $V_{GS}=0$ V; $f=1$ MHz

12 Forward characteristics of reverse diode

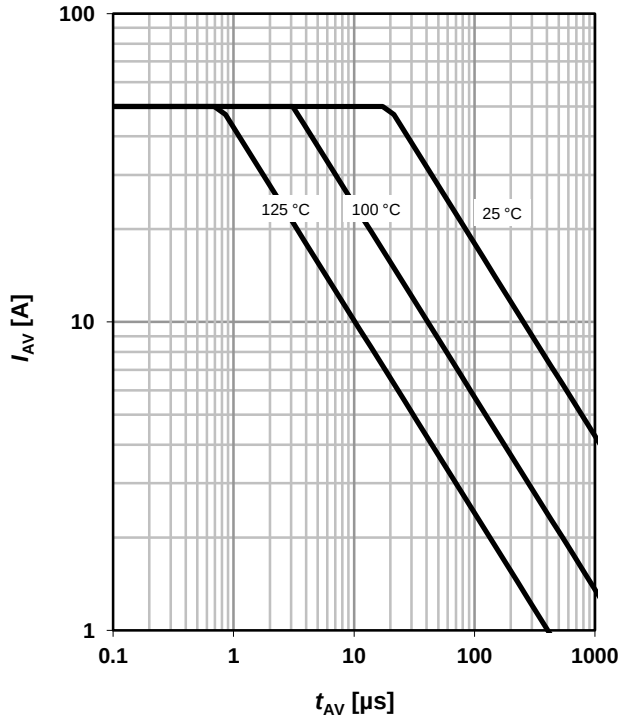
$I_F=f(V_{SD})$

parameter: T_j

13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

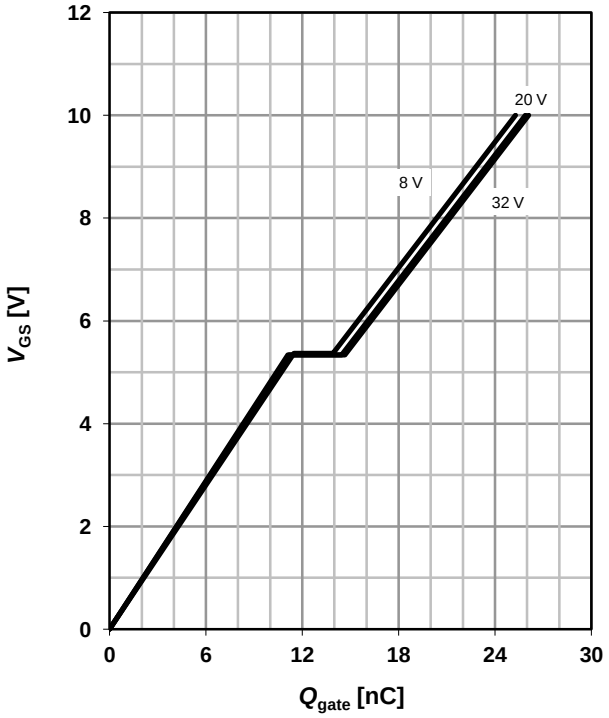
parameter: $T_{j(start)}$



14 Typ. gate charge

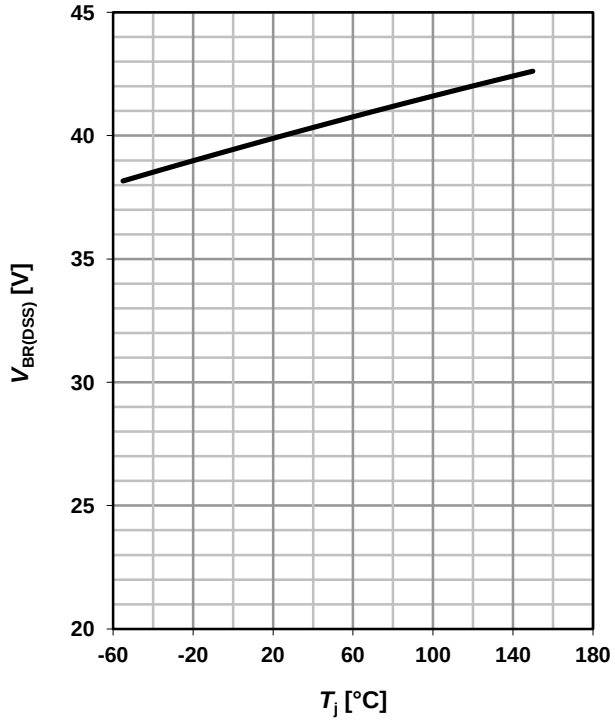
V_{GS}=f(Q_{gate}); I_D=30 A pulsed

parameter: V_{DD}



15 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=1 mA



16 Gate charge waveforms

Package Outline **PG-TDSON-8-5**

PG-TDSON-8-5: Outline

Footprint
Dimensions in mm

Package Outline

PG-TDSON-8: Tape

Dimensions in mm

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Information

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Warnings