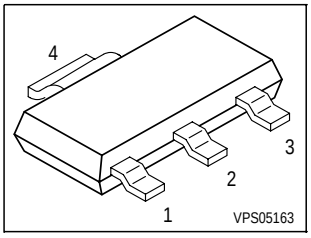
OptiMOS™ Small-Signal-Transistor

Features

- N-Channel
- Enhancement mode
- Avalanche rated
- Logic Level
- d*v*/d*t* rated

Product Summary

Drain source voltage	V_{DS}	55	V
Drain-source on-state resistance	$R_{DS(on)}$	33	mΩ
Continuous drain current	I_D	5.2	A



Type	Package	Ordering Code	Marking	Pin 1	PIN 2/4	PIN 3
BSP603S2L	SOT-223	-	-	G	D	S

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

Parameter	Symbol	Value	Unit
Continuous drain current T_A = 25 °C T_A = 70 °C	I_D	 5.2 4.1	A
Pulsed drain current T_A = 25 °C	$I_{D\ puls}$	21	
Avalanche energy, single pulse I_D = 5.2 A , V_{DD} = 25 V, R_{GS} = 25 Ω	E_{AS}	150	mJ
Avalanche energy, periodic limited by T_{jmax}	E_{AR}	0.18	
Reverse diode d*v*/d*t* I_S = 5.2 A, V_{DS} = 40 V, d*i*/d*t* = 200 A/µs, T_{jmax} = 150 °C	d*v*/d*t*	6	kV/µs
Gate source voltage	V_{GS}	± 20	V
Power dissipation T_A = 25 °C	P_{tot}	1.8	W
Operating and storage temperature	T_j , T_{stg}	-55...+150	°C
IEC climatic category; DIN IEC 68-1		55/150/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - soldering point (Pin 3)	R_{thJS}	-	17	tbd	K/W
SMD version, device on PCB:	R_{thJA}				
@ min. footprint		-	100	tbd	
@ 6 cm^2 cooling area F)		-	-	70	

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage V_{GS} = 0 V, I_D = 1 mA	$V_{(BR)DSS}$	55	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D = 50 µA	$V_{GS(th)}$	1.2	1.6	2	
Zero gate voltage drain current	I_{DSS}				µA
V_{DS} = 55 V, V_{GS} = 0 V, T_j = 25 °C		-	0.1	1	
V_{DS} = 55 V, V_{GS} = 0 V, T_j = 125 °C		-	10	100	
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	-	10	100	nA
Drain-source on-state resistance V_{GS} = 4.5 V, I_D = 2.6 A	$R_{DS(on)}$	-	tbd	40	mΩ
Drain-source on-state resistance V_{GS} = 10 V, I_D = 2.6 A	$R_{DS(on)}$	-	tbd	33	

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Transconductance	g_{fs}	$V_{DS}\geq 2*I_D*R_{DS(on)max}$, I_D=4.1	tbd	tbd	-	S
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	tbd	tbd	pF
Output capacitance	C_{oss}		-	tbd	tbd	
Reverse transfer capacitance	C_{rss}		-	tbd	tbd	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=4.5V, I_D=5.2A, R_G=5.6Ω	-	tbd	tbd	ns
Rise time	t_r	V_{DD}=30V, V_{GS}=4.5V, I_D=5.2mA, R_G=5.6Ω	-	tbd	tbd	
Turn-off delay time	$t_{d(off)}$		-	tbd	tbd	
Fall time	t_f		-	tbd	tbd	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=40V, I_D=5.2A	-	tbd	tbd	nC
Gate to drain charge	Q_{gd}		-	tbd	tbd	
Gate charge total	Q_g	V_{DD}=40V, I_D=5.2A, V_{GS}=0 to 10V	-	tbd	tbd	
Gate plateau voltage	$V_{(plateau)}$	V_{DD}=40V, I_D=5.2A	-	tbd	-	V
Reverse Diode						
Inverse diode continuous forward current	I_S	T_A=25°C	-	-	5.2	A
Inverse diode direct current, pulsed	I_{SM}		-	-	21	
Inverse diode forward voltage	V_{SD}	V_{GS}=0V, I_F=5.2A	-	tbd	tbd	V
Reverse recovery time	t_{rr}	V_R=30V, I_F=I_S, di_F/dt=100A/µs	-	tbd	tbd	ns
Reverse recovery charge	Q_{rr}		-	tbd	tbd	nC
Soft factor t_f / t_s	S		-	tbd	-	

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