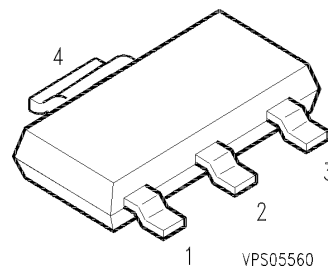


SIPMOS⁰ Power Transistor

- P-Channel
- Enhancement mode
- Avalanche rated
- Logic Level
- dv/dt rated



Pin 1	Pin2/4	Pin 3
G	D	S

Type	V_{DS}	I_D	$R_{DS(on)}$	@ V_{GS}	Package	Ordering Code
BSP 171 P	-60 V	-1.8 A	0.3 Ω	$V_{GS} = -10$ V	P-SOT223-4-1	Q67041-S4019
					-	-

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

Parameter	Symbol	Value	Unit
Continuous drain current	I_D		A
$T_A = 25$ °C		-1.8	
$T_A = 100$ °C		-1.15	
Pulsed drain current	I_D puls	-7.2	
$T_A = 25$ °C			
Avalanche energy, single pulse	E_{AS}	70	mJ
$I_D = -1.8$ A, $V_{DD} = -25$ V, $R_{GS} = 25$ Ω			
Avalanche current, periodic limited by T_{jmax}	I_{AR}	-1.8	A
Avalanche energy, periodic limited by $T_{j(max)}$	E_{AR}	0.18	mJ
Reverse diode dv/dt	dv/dt	6	KV/ μ s
$I_S = -1.8$ A, $V_{DD} \leq V_{(BR)DSS}$, $di/dt = 100$ A/ μ s,			
$T_{jmax} = 150$ °C			
Gate source voltage	V_{GS}	± 14	V
Power dissipation, $T_A = 25$ °C	P_{tot}	1.8	W
Operating temperature	T_j	-55 ... +150	°C
Storage temperature	T_{stg}	-55 ... +150	
IEC climatic category; DIN IEC 68-1		55/150/56	

Electrical Characteristics

Parameter at $T_j = 25\text{ °C}$, unless otherwise specified	Symbol	Values			Unit
		min.	typ.	max.	

Thermal Characteristics

Thermal resistance, junction -soldering point (Pin 4)	R_{thJS}	-	tbd	tbd	K/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	-	
SMD version, device on PCB: @ min. footprint @ 6 cm ² cooling area ^{F)}	R_{thJA}	- - -	tbd tbd	- 70	

Static Characteristics

Drain- source breakdown voltage $V_{GS} = 0\text{ V}$, $I_D = -0.25\text{ mA}$	$V_{(BR)DSS}$	-60	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D = -460\text{ }\mu\text{A}$, $T_j = 25\text{ °C}$	$V_{GS(th)}$	-1	-1.5	-2	
Zero gate voltage drain current $V_{DS} = -60\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = -40\text{ °C}$ $V_{DS} = -60\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 25\text{ °C}$ $V_{DS} = -60\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 150\text{ °C}$	I_{DSS}	- - -	- -0.1 -	-0.1 -1 -100	μA
Gate-source leakage current $V_{GS} = -20\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	-	-10	-100	
Drain-Source on-state resistance $V_{GS} = -4.5\text{ V}$, $I_D = -1.5\text{ A}$ $V_{GS} = -10\text{ V}$, $I_D = -1.8\text{ A}$	$R_{DS(on)}$	- -	0.3 0.21	0.45 0.3	Ω

Electrical Characteristics

Parameter at $T_j = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = -1.8\text{ A}$	g_{fs}	1	3	-	S
Input capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = -25\text{ V}$, $f = 1\text{ MHz}$	C_{iss}	-	365	460	pF
Output capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = -25\text{ V}$, $f = 1\text{ MHz}$	C_{oss}	-	105	135	
Reverse transfer capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = -25\text{ V}$, $f = 1\text{ MHz}$	C_{rss}	-	40	50	
Turn-on delay time $V_{DD} = -30\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -1.8\text{ A}$, $R_G = 6\text{ }\Omega$	$t_{d(on)}$	-	13	20	ns
Rise time $V_{DD} = -30\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -1.8\text{ A}$, $R_G = 6\text{ }\Omega$	t_r	-	30	45	
Turn-off delay time $V_{DD} = -30\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -1.8\text{ A}$, $R_G = 6\text{ }\Omega$	$t_{d(off)}$	-	200	300	
Fall time $V_{DD} = -30\text{ V}$, $V_{GS} = -10\text{ V}$, $I_D = -1.8\text{ A}$, $R_G = 6\text{ }\Omega$	t_f	-	75	115	

Electrical Characteristics

Parameter at $T_j = 25\text{ °C}$, unless otherwise specified	Symbol	Values			Unit
		min.	typ.	max.	

Dynamic Characteristics

Gate charge at threshold $V_{DD} = -24\text{ V}$, $I_D \geq -0,1\text{ A}$, $V_{GS} = 0\text{ to } -1\text{ V}$	$Q_{G(th)}$	-	0.6	0.9	nC
Gate charge at $V_{gs}=5\text{V}$ $V_{DD} = -24\text{ V}$, $I_D = -1.8\text{ A}$, $V_{GS} = 0\text{ to } -5\text{ V}$	$Q_{g(5)}$	-	8	12	
Gate charge total $V_{DD} = -24\text{ V}$, $I_D = -1.8\text{ A}$, $V_{GS} = 0\text{ to } -10\text{ V}$	Q_g	-	14	21	nC
Gate plateau voltage $V_{DD} = -24\text{ V}$, $I_D = -1.8\text{ A}$	$V_{(plateau)}$	-	2.8	-	V

Reverse Diode

Inverse diode continuous forward current $T_A = 25\text{ °C}$	I_S	-	-	-1.8	A
Inverse diode direct current,pulsed $T_A = 25\text{ °C}$	I_{SM}	-	-	-7.2	
Inverse diode forward voltage $V_{GS} = 0\text{ V}$, $I_F = -3.6\text{ A}$	V_{SD}	-	-0.95	-1.2	V
Reverse recovery time $V_R = -30\text{ V}$, $I_F = I_S$, $di_F/dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	100	150	ns
Reverse recovery charge $V_R = -30\text{ V}$, $I_F = I_S$, $di_F/dt = 100\text{ A}/\mu\text{s}$	Q_{rr}	-	0.2	0.3	μC

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