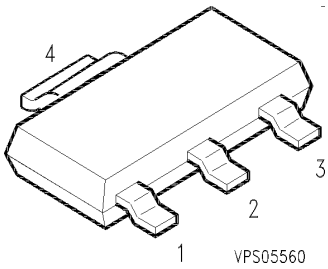
SIEMENS

Preliminary data

SIPMOS® Power Transistor

- P-Channel
- Enhancement mode
- Avalanche rated
- Logic Level
- d*v*/d*t* 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 T_A = 25 °C T_A = 100 °C	I_D	 -1.8 -1.15	A
Pulsed drain current T_A = 25 °C	$I_{D\ puls}$	-7.2	
Avalanche energy, single pulse I_D = -1.8 A, V_{DD} = -25 V, R_{GS} = 25 Ω	E_{AS}	70	mJ
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 d*v*/d*t* I_S = -1.8 A, $V_{DD} \le V_{(BR)DSS}$, d*i*/d*t* = 100 A/µs, T_{jmax} = 150 °C	d*v*/d*t*	6	KV/µs
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 °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:	R_{thJA}				
@ min. footprint		-	tbd	-	
@ 6 cm^2 cooling area[F)]		-	tbd	70	

Static Characteristics

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

Electrical Characteristics

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

Electrical Characteristics

Parameter at T_j = 25 °C, unless otherwise specified	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Gate charge at threshold V_{DD} = -24 V, $I_D \geq$ -0,1 A, V_{GS} = 0 to - 1 V	$Q_{G(th)}$	-	0.6	0.9	nC
Gate charge at V_{gs}=5V V_{DD} = -24 V, I_D = -1.8 A , V_{GS} = 0 to -5 V	$Q_{g(5)}$	-	8	12	
Gate charge total V_{DD} = -24 V, I_D = -1.8 A, V_{GS} = 0 to -10 V	Q_g	-	14	21	nC
Gate plateau voltage V_{DD} = -24 V, I_D = -1.8 A	$V_{(plateau)}$	-	2.8	-	V

Reverse Diode

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

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