

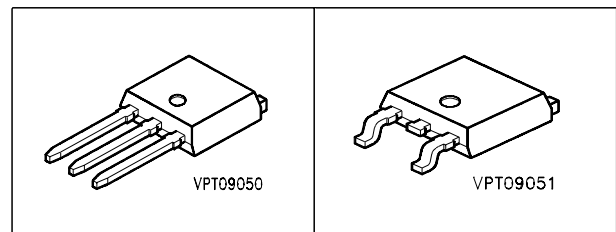
## SIPMOS® Power-Transistor

### Features

- P-Channel
- Enhancement mode
- Avalanche rated
- $dv/dt$  rated
- 175°C operating temperature

### Product Summary

Drain source voltage	$V_{DS}$	-60	V
Drain-source on-state resistance	$R_{DS(on)}$	0.075	$\Omega$
Continuous drain current	$I_D$	-30	A



Type	Package
SPD30P06P	P-TO252-3
SPU30P06P	P-TO251-3

Pin 1	PIN 2/4	PIN 3
G	D	S

**Maximum Ratings**, at  $T_j = 25\text{ °C}$ , unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current $T_C = 25\text{ °C}$ $T_C = 100\text{ °C}$	$I_D$	-30 -21.5	A
Pulsed drain current $T_C = 25\text{ °C}$	$I_D \text{ puls}$	-120	
Avalanche energy, single pulse $I_D = -30\text{ A}$ , $V_{DD} = -25\text{ V}$ , $R_{GS} = 25\ \Omega$	$E_{AS}$	250	mJ
Avalanche energy, periodic limited by $T_{jmax}$	$E_{AR}$	12.5	
Reverse diode $dv/dt$ $I_S = -30\text{ A}$ , $V_{DS} = -48\text{ V}$ , $di/dt = 200\text{ A}/\mu\text{s}$ , $T_{jmax} = 175\text{ °C}$	$dv/dt$	6	kV/ $\mu\text{s}$
Gate source voltage	$V_{GS}$	$\pm 20$	V
Power dissipation $T_C = 25\text{ °C}$	$P_{tot}$	125	W
Operating and storage temperature	$T_j, T_{stg}$	-55...+175	$^{\circ}\text{C}$
IEC climatic category; DIN IEC 68-1		55/175/56	

**Thermal Characteristics**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Characteristics</b>					
Thermal resistance, junction - case	$R_{thJC}$	-	-	1.2	K/W
Thermal resistance, junction - ambient, leaded	$R_{thJA}$	-	-	100	
SMD version, device on PCB:	$R_{thJA}$				
@ min. footprint		-	-	75	
@ 6 cm <sup>2</sup> cooling area <sup>1)</sup>		-	-	50	

**Electrical Characteristics, at  $T_j = 25\text{ °C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Static Characteristics</b>					
Drain- source breakdown voltage $V_{GS} = 0\text{ V}$ , $I_D = -250\text{ }\mu\text{A}$	$V_{(BR)DSS}$	-60	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D = -1.7\text{ mA}$	$V_{GS(th)}$	-2.1	-3	-4	
Zero gate voltage drain current $V_{DS} = -60\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_j = 25\text{ °C}$ $V_{DS} = -60\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_j = 150\text{ °C}$	$I_{DSS}$	-	-0.1	-1	$\mu\text{A}$
Gate-source leakage current $V_{GS} = -20\text{ V}$ , $V_{DS} = 0\text{ V}$	$I_{GSS}$	-	-10	-100	
Drain-source on-state resistance $V_{GS} = -10\text{ V}$ , $I_D = -21.5\text{ A}$	$R_{DS(on)}$	-	0.069	0.075	$\Omega$

<sup>1</sup>Device on 40mm\*40mm\*1.5mm epoxy PCB FR4 with 6cm<sup>2</sup> (one layer, 70  $\mu\text{m}$  thick) copper area for drain connection. PCB is vertical without blown air.

**Electrical Characteristics, at  $T_j = 25\text{ °C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Dynamic Characteristics</b>					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$ , $I_D = -21.5\text{ A}$	$g_{fs}$	5.2	10.4	-	S
Input capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = -25\text{ V}$ , $f = 1\text{ MHz}$	$C_{iss}$	-	1228	1535	pF
Output capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = -25\text{ V}$ , $f = 1\text{ MHz}$	$C_{oss}$	-	387	383	
Reverse transfer capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = -25\text{ V}$ , $f = 1\text{ MHz}$	$C_{rss}$	-	142	177	
Turn-on delay time $V_{DD} = -30\text{ V}$ , $V_{GS} = -10\text{ V}$ , $I_D = -21.5\text{ A}$ , $R_G = 1.6\text{ }\Omega$	$t_{d(on)}$	-	13	19.5	ns
Rise time $V_{DD} = -30\text{ V}$ , $V_{GS} = -10\text{ V}$ , $I_D = -21.5\text{ A}$ , $R_G = 1.6\text{ }\Omega$	$t_r$	-	11	16.5	
Turn-off delay time $V_{DD} = -30\text{ V}$ , $V_{GS} = -10\text{ V}$ , $I_D = -21.5\text{ A}$ , $R_G = 1.6\text{ }\Omega$	$t_{d(off)}$	-	30	45	
Fall time $V_{DD} = -30\text{ V}$ , $V_{GS} = -10\text{ V}$ , $I_D = -21.5\text{ A}$ , $R_G = 1.6\text{ }\Omega$	$t_f$	-	20	30	











