

SPU01N50M2 SPD01N50M2

Cool MOSTM Power-Transistor

- New revolutionary high voltage technology
- Ultra low gate charge
- Periodic avalanche rated
- Extreme dv/dt rated
- Optimized capacitances
- Improved noise immunity
- Former development designation:
- SPUx7N60S5/SPDx7N60S5



Туре	$V_{\rm DS}$	I _D	R _{DS(on)}	Package	Marking	Ordering Code
SPU01N50M2	500 V	0.8 A	6Ω	P-TO251-3-1	01N50M2	Q67040-S4324
SPD01N50M2				P-TO252	01N50M2	Q67040-S4325

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

Parameter	Symbol	Value	Unit
Continuous drain current	I _D		A
$T_{\rm C} = 25 \ ^{\circ}{\rm C}$		0.8	
T _C = 100 °C		0.5	
Pulsed drain current, $t_p = 1 \text{ ms}^{-1}$	I _{D puls}	1.6	
$T_{\rm C} = 25 \ ^{\circ}{\rm C}$			
Avalanche energy, single pulse	E _{AS}	tbd	mJ
$I_{\rm D} = 0.8$ A, $V_{\rm DD} = 50$ V, $R_{\rm GS} = 25~\Omega$			
Periodic avalanche energy E_{AR} only limited by T_{jmax}			
Reverse diode d <i>v</i> /d <i>t</i>	d <i>v</i> /d <i>t</i>	6	kV/µs
$I_{\rm S} = 0.8 \text{ A}, V_{\rm DS} < V_{\rm DSS}, di/dt = 100 \text{ A}/\mu\text{s},$			
$T_{jmax} = 150 \ ^{\circ}C$			
Gate source voltage	V _{GS}	±20	V
Power dissipation	P _{tot}	11	W
$T_{\rm C} = 25 \ ^{\circ}{\rm C}$			
Operating and storage temperature	T _j , T _{stg}	-55+150	°C



Electrical Characteristics, at $T_i = 25$ °C, unless otherwise specified

Parameter	Symbol		Values		Unit
		min.	typ.	max.	
Thermal Characteristics					
Thermal resistance, junction - case	R _{thJC}	-	-	11	K/W
Thermal resistance, junction - ambient	<i>R</i> thJA	-	-	75	
(Leaded and through-hole packages)					
SMD version, device on PCB:	R _{thJA}				
@ min. footprint		-	-	75	
@ 6 cm ² cooling area $^{2)}$		-	-	50	
	•	1		1	ł
Static Characteristics at $T_{i} = 25$ °C unless c	therwise spec	cified			

		in o a			
Drain- source breakdown voltage	V _{(BR)DSS}	500	-	-	V
$V_{\rm GS} = 0 \text{ V}, I_{\rm D} = 0.25 \text{ mA}$					
Gate threshold voltage, $V_{GS} = V_{DS}$	V _{GS(th)}	2.3	3	3.7	
$I_{\rm D} = 250 \ \mu \text{A}, \ T_{\rm j} = 25 \ ^{\circ}\text{C}$					
Zero gate voltage drain current, $V_{\text{DS}} = V_{\text{DSS}}$	I _{DSS}				μA
$V_{\rm GS} = 0 \text{V}, T_{\rm j} = 25 ^{\circ}\text{C}$		-	0.5	1	
$V_{\rm GS} = 0 \rm V, T_{\rm j} = 150 ^{\circ} \rm C$		-	-	tbd	
Gate-source leakage current	I _{GSS}	-	-	100	nA
$V_{\rm GS} = 20 \text{ V}, \ V_{\rm DS} = 0 \text{ V}$					
Drain-Source on-state resistance	R _{DS(on)}	-	tbd	6	Ω
$V_{\rm GS}$ = 10 V, $I_{\rm D}$ = 0.5 A					

¹current limited by Tjmax

² Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6 cm2 (one layer, 70µm thick) copper area for drain connection. PCB is vertical without blown air.



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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance	<i>9</i> fs	-	tbd	-	S
$V_{\rm DS} \ge 2^* I_{\rm D}^* R_{\rm DS(on)max}$, $I_{\rm D} = 0.5$ A					
Input capacitance	C _{iss}	-	tbd	-	pF
$V_{\rm GS} = 0$ V, $V_{\rm DS} = 25$ V, $f = 1$ MHz					
Output capacitance	C _{oss}	-	tbd	-	
$V_{\rm GS} = 0$ V, $V_{\rm DS} = 25$ V, $f = 1$ MHz					
Reverse transfer capacitance	C _{rss}	-	tbd	-	
$V_{\rm GS} = 0$ V, $V_{\rm DS} = 25$ V, $f = 1$ MHz					
Turn-on delay time	t _{d(on)}	-	tbd	-	ns
$V_{\rm DD}$ = 350 V, $V_{\rm GS}$ = 10 V, $I_{\rm D}$ = 0.8 A,					
$R_{\rm G} = 100 \ \Omega$					
Rise time	<i>t</i> r	-	tbd	-	
$V_{\text{DD}} = 350 \text{ V}, \ V_{\text{GS}} = 10 \text{ V}, \ I_{\text{D}} = 0.8 \text{ A},$					
$R_{\rm G} = 100 \ \Omega$					
Turn-off delay time	t _{d(off)}	-	tbd	-	
$V_{\rm DD}$ = 350 V, $V_{\rm GS}$ = 10 V, $I_{\rm D}$ = 0.8 A,					
$R_{\rm G} = 100 \ \Omega$					
Fall time	t _f	-	tbd	-	
$V_{\rm DD}$ = 350 V, $V_{\rm GS}$ = 10 V, $I_{\rm D}$ = 0.8 A,					
$R_{\rm G} = 100 \ \Omega$					



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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Gate Charge Characteristics					•
Gate to source charge	Qgs	-	tbd	-	nC
$V_{\rm DD} = 350$ V, $I_{\rm D} = 0.8$ A					
Gate to drain charge	Q _{gd}	-	tbd	-	
$V_{\rm DD} = 350$ V, $I_{\rm D} = 0.8$ A					
Total gate charge	Qg	-	tbd	-	
$V_{\rm DD}$ = 350 V, $I_{\rm D}$ = 0.8 A, $V_{\rm GS}$ = 0 to 10 V					
Reverse Diode					
Inverse diode continuous forward current	I _S	-	-	0.8	А
T _C = 25 °C					
Inverse diode direct current,pulsed	I _{SM}	-	-	1.6	
T _C = 25 °C					
Inverse diode forward voltage	V _{SD}	-	tbd	1.2	V
$V_{\rm GS} = 0$ V, $I_{\rm F} = 0.8$ A					
Reverse recovery time	<i>t</i> rr	-	tbd	-	ns
V_{R} = 100 V, I_{F} = I_{S} , d i_{F} /d t = 100 A/µs					
Reverse recovery charge	Q _{rr}	-	tbd	-	μC
V _R = 100 V, I _F =I _S , d <i>i</i> _F /d <i>t</i> = 100 A/µs					



P-TO251-3-1





	dimensions [mm]		
symbol	min	max	
А	6.47	6.73	
В	5.25	5.41	
С	4.19	4.43	
D	0.63	0.89	
E	2.29 typ.		
F	2.18	2.39	
G	0.76	0.86	
Н	1.01	1.11	
К	5.97	6.23	
L	9.14	9.65	
М	0.46	0.56	
N	0.98	1.15	



P-TO252







BACK VIEW

	dimensions [mm]			
symbol	min max			
А	6.40	6.73		
В	5.25	5.50		
С	(0.65)	(1.15)		
D	0.63	0.89		
E	2.	28		
F	2.19	2.39		
G	0.76	0.98		
Н	0.90	1.21		
К	5.97	6.23		
L	9.40	10.40		
М	0.46	0.58		
N	0.87	1.15		
P	0.51			
R	5.00	-		
S	4.17	-		
Т	0.26	1.02		
U	-	-		

Target data sheet



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