SIPMOS® Power-Transistor

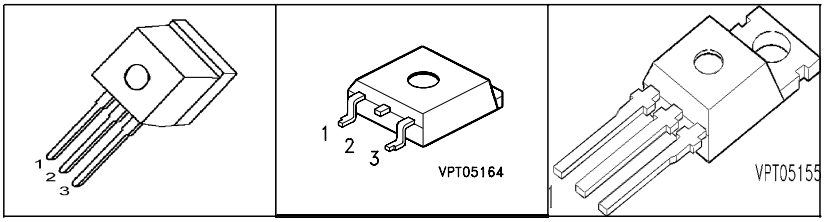
Feature

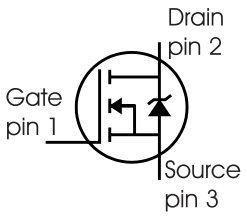
- N-Channel
- Enhancement mode
- 175°C operating temperature
- Avalanche rated
- d*v*/d*t* rated

Product Summary

V_{DS}	100	V
$R_{DS(on)}$	180	mΩ
I_D	10.3	A

P-TO262-3-1 P-TO263-3-2 P-TO220-3-1





Type	Package	Ordering Code	Marking
SPP10N10	P-TO220-3-1	-	10N10
SPB10N10	P-TO263-3-2	-	10N10
SPI10N10	P-TO262-3-1	-	10N10

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

Parameter	Symbol	Value	Unit
Continuous drain current	I_D		A
T_C=25°C		10.3	
T_C=100°C		-	
Pulsed drain current	$I_{D\ puls}$	41.2	
T_C=25°C			
Avalanche energy, single pulse	E_{AS}	60	mJ
I_D=10.3 A , V_{DD}=25V, R_{GS}=25Ω			
Reverse diode d*v*/d*t*	d*v*/d*t*	6	kV/µs
I_S=10.3A, V_{DS}=80V, d*i*/d*t*=200A/µs, T_{jmax}=175°C			
Gate source voltage	V_{GS}	±20	V
Power dissipation	P_{tot}	50	W
T_C=25°C			
Operating and storage temperature	T_j , T_{stg}	-55... +175	°C
IEC climatic category; DIN IEC 68-1		55/175/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - case	R_{thJC}	-	-	3	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	100	
SMD version, device on PCB:	R_{thJA}				
@ min. footprint		-	-	75	
@ 6 cm^2 cooling area [1)]		-	-	50	

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}=0V, I_D=1mA	$V_{(BR)DSS}$	100	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D = 21 µA	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current	I_{DSS}				µA
V_{DS}=100V, V_{GS}=0V, T_j=25°C		-	0.01	1	
V_{DS}=100V, V_{GS}=0V, T_j=125°C		-	1	100	
Gate-source leakage current V_{GS}=20V, V_{DS}=0V	I_{GSS}	-	1	100	nA
Drain-source on-state resistance V_{GS}=10V, I_D=-A	$R_{DS(on)}$	-	tbd	180	mΩ

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

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=-A	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}=50V, V_{GS}=10V, I_D=10.3A, R_G=28Ω	-	tbd	tbd	ns
Rise time	t_r		-	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}=80V, I_D=10.3A	-	tbd	tbd	nC
Gate to drain charge	Q_{gd}		-	tbd	tbd	
Gate charge total	Q_g	V_{DD}=80V, I_D=10.3A, V_{GS}=0 to 10V	-	tbd	tbd	
Gate plateau voltage	$V_{(plateau)}$	V_{DD}=80V, I_D=10.3A	-	tbd	-	V
Reverse Diode						
Inverse diode continuous forward current	I_S	T_C=25°C	-	-	10.3	A
Inverse diode direct current, pulsed	I_{SM}		-	-	41.2	
Inverse diode forward voltage	V_{SD}	V_{GS}=0V, I_F=10.3A	-	tbd	tbd	V
Reverse recovery time	t_{rr}	V_R=50V, I_F=I_S, di_F/dt=100A/µs	-	tbd	tbd	ns
Reverse recovery charge	Q_{rr}		-	tbd	tbd	nC

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