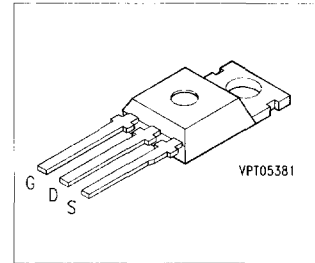


SIPMOS® Power Transistor

BUZ 100

- N channel
- Enhancement mode
- Avalanche-rated
- dv/dt rated



Type	V_{DS}	I_D	$R_{DS(on)}$	Package ¹⁾	Ordering Code
BUZ 100	50 V	60 A	0.018 Ω	TO-220 AB	C67078-S1348-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current, $T_C = 101\text{ }^\circ\text{C}$	I_D	60	A
Pulsed drain current, $T_C = 25\text{ }^\circ\text{C}$	$I_{D\text{ puls}}$	240	
Avalanche current, limited by $T_{j\text{ max}}$	I_{AR}	60	
Avalanche energy, periodic limited by $T_{j\text{ (max)}}$	E_{AR}	28	mJ
Avalanche energy, single pulse $I_D = 60\text{ A}$, $V_{DD} = 25\text{ V}$, $R_{GS} = 25\text{ }\Omega$ $L = 79\text{ }\mu\text{H}$, $T_j = 25\text{ }^\circ\text{C}$	E_{AS}	285	
Reverse diode dv/dt $I_S = 60\text{ A}$, $V_{DS} = 40$ $T_{S\text{ max}} = di/dt = 200\text{ A}/\mu\text{s}$	dv/dt	6.0	kV/ μs
Gate-source voltage	V_{GS}	± 20	V
Power dissipation, $T_C = 25\text{ }^\circ\text{C}$	P_{tot}	250	W
Operating and storage temperature range	T_j, T_{stg}	- 55 ... + 175	$^\circ\text{C}$
Thermal resistance, chip-case	$R_{th\text{ JC}}$	≤ 0.6	K/W
DIN humidity category, DIN 40 040	-	E	-
IEC climatic category, DIN IEC 68-1	-	55/150/56	

1) See chapter Package Outlines.

Electrical Characteristics

at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Static characteristics

Drain-source breakdown voltage $V_{GS} = 0\text{ V}, I_D = 0.25\text{ mA}$	$V_{(BR)DSS}$	50	–	–	V
Gate threshold voltage $V_{GS} = V_{DS}, I_D = 1\text{ mA}$	$V_{GS(th)}$	2.1	3.0	4.0	
Zero gate voltage drain current $V_{DS} = 50\text{ V}, V_{GS} = 0\text{ V}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 150\text{ }^\circ\text{C}$	I_{DSS}	– –	0.1 10	1.0 100	μA
Gate-source leakage current $V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	–	10	100	nA
Drain-source on-resistance $V_{GS} = 10\text{ V}, I_D = 60\text{ A}$	$R_{DS(on)}$	–	0.014	0.018	Ω

Dynamic characteristics

Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max}, I_D = 60\text{ A}$	g_{fs}	25.0	39.0	–	S
Input capacitance $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{iss}	–	2400	3200	pF
Output capacitance $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{oss}	–	800	1200	
Reverse transfer capacitance $V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{rss}	–	300	450	
Turn-on time $t_{on}, (t_{on} = t_{d(on)} + t_r)$ $V_{DD} = 30\text{ V}, V_{GS} = 10\text{ V}, I_D = 3.0\text{ A}, R_{GS} = 50\text{ }\Omega$	$t_{d(on)}$	–	40	60	ns
	t_r	–	100	150	
Turn-off time $t_{off}, (t_{off} = t_{d(off)} + t_f)$ $V_{DD} = 30\text{ V}, V_{GS} = 10\text{ V}, I_D = 3.0\text{ A}, R_{GS} = 50\text{ }\Omega$	$t_{d(off)}$	–	250	335	
	t_f	–	140	190	

Electrical Characteristics (cont'd)

at $T_j = 25\text{ °C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Reverse diode

Continuous reverse drain current $T_C = 25\text{ °C}$	I_S	–	–	60	A
Pulsed reverse drain current $T_C = 25\text{ °C}$	I_{SM}	–	–	240	
Diode forward on-voltage $I_S = 120\text{ A}$, $V_{GS} = 0\text{ V}$	V_{SD}	–	1.4	1.8	V
Reverse recovery time $V_R = 30\text{ V}$, $I_F = I_S$, $di_F / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	–	70	–	μs
Reverse recovery charge $V_R = 30\text{ V}$, $I_F = I_S$, $di_F / dt = 100\text{ A}/\mu\text{s}$	Q_{rr}	–	0.16	–	μC