

Appendix A

Datasheet of PMSM

Technical Data and Speed-Torque Diagrams

3.1 Speed-torque diagrams

Table 3-32 1FT6084 force ventilated

1FT6084					
Technical data	Code	Units	-8SH7□	-8SK7□	
Engineering data					
Rated speed	n_N	RPM	4500	6000	
No. of poles	$2p$		8	8	
Rated torque (100K)	$M_N(100K)$	Nm	20.0	17.0	
Rated current (100K)	$I_N(100K)$	A	24.5	25.5	
Stall torque (60K)	$M_0(60K)$	Nm	21.6	21.6	
Stall torque (100K)	$M_0(100K)$	Nm	26.0	26.0	
Stall current (60K)	$I_0(60K)$	A	21.0	29.0	
Stall current (100K)	$I_0(100K)$	A	26.0	35.0	
Moment of inertia (with brake)	J_{mot}	10^{-4} kgm ²	61.1	61.1	
Moment of inertia (without brake)	J_{mot}	10^{-4} kgm ²	48.0	48.0	
Optimum operating point					
Optimum speed	N_{opt}	RPM	4500	6000	
Optimum power	P_{opt}	kW	9.42	10.68	
Limiting data					
Max. permissible speed (mech.)	N_{max}	RPM	7900	7900	
Max. torque	M_{max}	Nm	65	65	
Max. current	I_{max}	A	86	112	
Physical constants					
Torque constant	k_t	Nm/A	1.01	0.74	
Voltage constant	k_E	V/1000 RPM	64	47	
Winding resistance at 20° C	R_{ph}	Ohm	0.18	0.1	
Rotating field inductance	L_D	mH	2.0	1.2	
Electrical time constant	T_{el}	ms	11.1	12.0	
Shaft torsional stiffness	C_t	Nm/rad	76000	76000	
Mechanical time constant	T_{mech}	ms	2.5	2.6	
Thermal time constant	T_{th}	min	15	15	
Weight with brake	m	kg	28.5	28.5	
Weight without brake	m	kg	25.0	25.0	