SMA5118

N-channel

3-phase DC motor 200V AC direct drive   **External dimensions Ⓑ ··· SMA**

Absolute maximum ratings

(Ta=25°C)

Symbol	Ratings	Unit
V_DSS	500	V
V_GSS	±30	V
I_D	±5	A
I_D(pulse)	±10 (PW≤1ms, Du≤1%)	A
E_AS*	45	mJ
P_T	4 (Ta=25°C, with all circuits operating, without heatsink)	W
	35 (Tc=25°C,with all circuits operating, with infinite heatsink)	W
θj–a	31.2 (Junction-Air, Ta=25°C, with all circuits operating)	°C/W
θj–c	3.57 (Junction-Case, Tc=25°C, with all circuits operating)	°C/W
Tch	150	°C
Tstg	−40 to +150	°C

* : V_DD=30V, L=3.4mH, I_D=5A, unclamped, R_G=50Ω, see Fig. E on page 15.

■Equivalent circuit diagram

Electrical characteristics

(Ta=25°C)

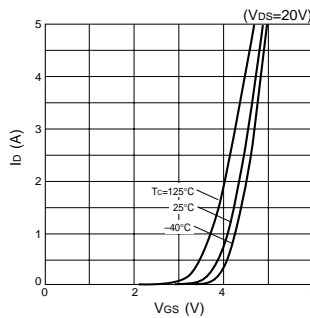| Symbol	Specification			Unit	Conditions
	min	typ	max		
V_(BR)DSS	500			V	I_D=100μA, V_GS=0V
I_GSS			±100	nA	V_GS=±30V
I_DSS			100	μA	V_DS=500V, V_GS=0V
V_TH	2.0		4.0	V	V_DS=10V, I_D=1mA
Re(yfs)	2.4	4.0		S	V_DS=10V, I_D=2.5A
R_DS(ON)		1.05	1.4	Ω	V_GS=10V, I_D=2.5A
Ciss		770		pF	V_DS=10V,
Coss		290		pF	f=1.0MHz, V_GS=0V
td(on)		20		ns	I_D=2.5A,
tr		25		ns	V_DD≒200V,
td(off)		70		ns	R_L=80Ω, V_GS=10V,
tf		65		ns	see Fig. 3 on page 16.
V_SD		1.1	1.5	V	I_SD=5A, V_GS=0V
trr		75		ns	I_SD=2.5A, di/dt=100A/μs

━ Characteristic curves ━

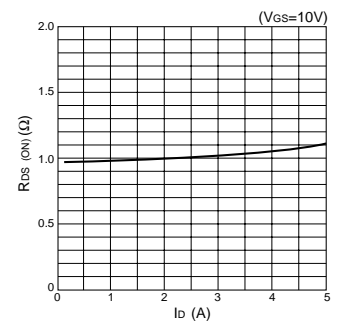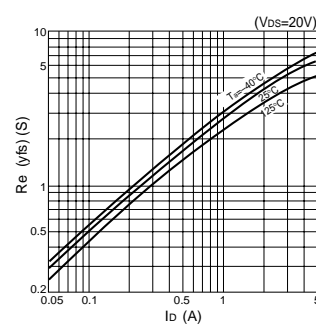### I_D-V_DS Characteristics (Typical)

I_D-V_GS Characteristics (Typical)

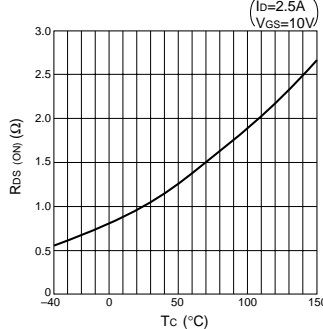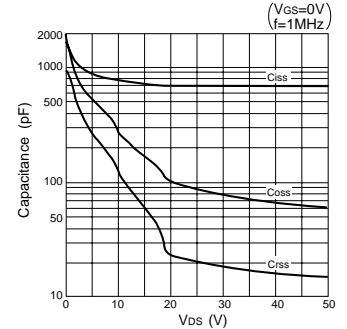### R_DS(ON)-I_D Characteristics (Typical)

Re(yfs)-I_D Characteristics (Typical)

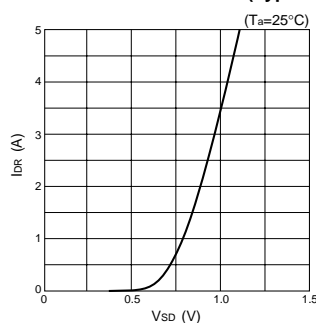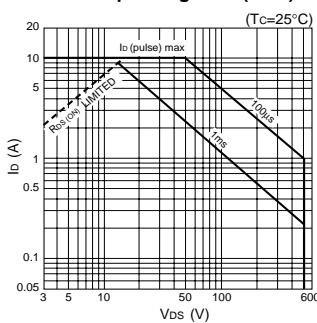### R_DS(ON)-T_C Characteristics (Typical)

Capacitance-V_DS Characteristics (Typical)

I_DR-V_SD Characteristics (Typical)

Safe Operating Area (SOA)

P_T-T_a Characteristics