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For any questions, you can email us directly:

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SMA5112

N-channel

3-phase DC motor 100V AC direct drive

External dimensions SMA

Absolute maximum ratings

($T_a=25^\circ\text{C}$)

Symbol	Ratings	Unit
V_{DSS}	250	V
V_{GSS}	± 20	V
I_D	± 7	A
$I_{D(pulse)}$	± 15 ($PW \leq 1ms, Du \leq 1\%$)	A
E_{AS}^*	55	mJ
P_T	4 ($T_a=25^\circ\text{C}$, with all circuits operating, without heatsink)	W
	35 ($T_c=25^\circ\text{C}$, with all circuits operating, with infinite heatsink)	W
θ_{j-a}	31.2 (Junction-Air, $T_a=25^\circ\text{C}$, with all circuits operating)	$^\circ\text{C/W}$
θ_{j-c}	3.57 (Junction-Case, $T_c=25^\circ\text{C}$, with all circuits operating)	$^\circ\text{C/W}$
T_{ch}	150	$^\circ\text{C}$
T_{stg}	-40 to +150	$^\circ\text{C}$

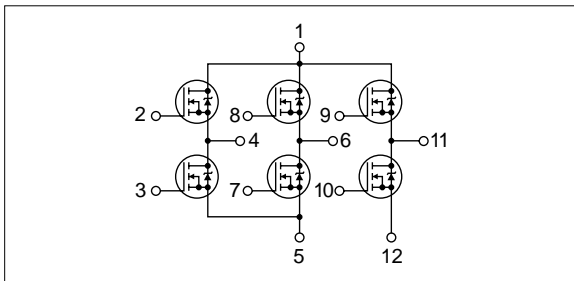
* : $V_{DD}=25V, L=2.0mH, I_D=7A$, unclamped, $R_G=50\Omega$, see Fig. E on page 15.

Electrical characteristics

($T_a=25^\circ\text{C}$)

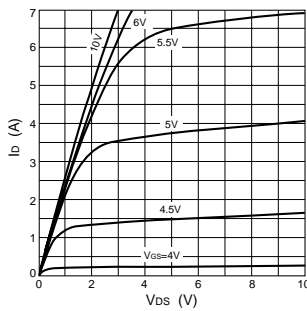
Symbol	Specification			Unit	Conditions
	min	typ	max		
$V_{(BR)DSS}$	250			V	$I_D=100\mu A, V_{GS}=0V$
I_{GSS}			± 100	nA	$V_{GS}=\pm 20V$
I_{DSS}			100	μA	$V_{DS}=250V, V_{GS}=0V$
V_{TH}	2.0		4.0	V	$V_{DS}=10V, I_D=1mA$
$R_{e(yfs)}$	2.5	5.0		S	$V_{DS}=10V, I_D=3.5A$
$R_{DS(ON)}$		0.4	0.5	Ω	$V_{GS}=10V, I_D=3.5A$
C_{iss}		450		pF	$V_{DS}=10V, f=1.0MHz,$ $V_{GS}=0V$
C_{oss}		280		pF	
$t_{d(on)}$		20		ns	$I_D=3.5A,$ $V_{DD} \doteq 100V,$ $R_L=28.6\Omega, V_{GS}=10V,$ see Fig. 3 on page 16.
t_r		30		ns	
$t_{d(off)}$		55		ns	
t_f		75		ns	
V_{SD}		1.0	1.5	V	$I_{SD}=7A, V_{GS}=0V$
t_{rr}		600		ns	$I_{SD}=\pm 100mA$

Equivalent circuit diagram

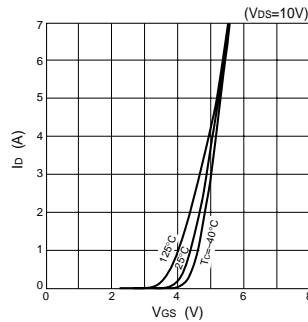


Characteristic curves

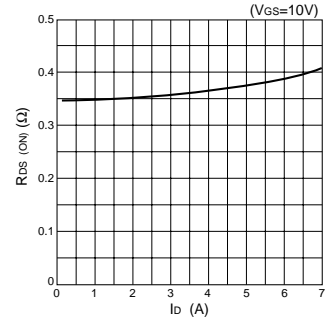
I_D - V_{DS} Characteristics (Typical)



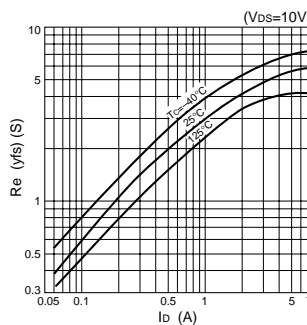
I_D - V_{GS} Characteristics (Typical)



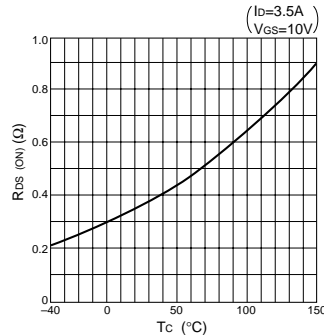
$R_{DS(ON)}$ - I_D Characteristics (Typical)



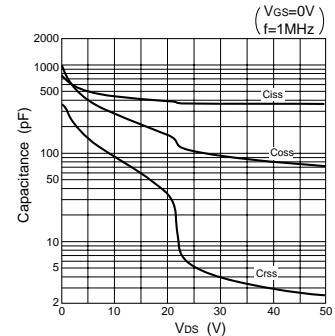
$R_{e(yfs)}$ - I_D Characteristics (Typical)



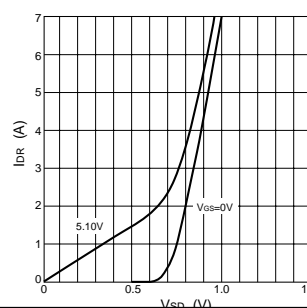
$R_{DS(ON)}$ - T_c Characteristics (Typical)



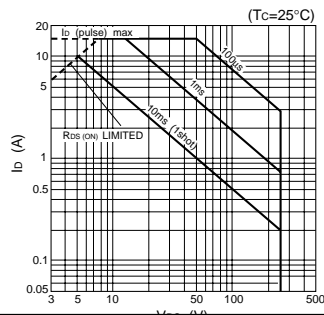
Capacitance- V_{DS} Characteristics (Typical)



I_{DR} - V_{SD} Characteristics (Typical)



Safe Operating Area (SOA)



P_T - T_a Characteristics

