

## **Excellent Integrated System Limited**

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Sanken](#)

[SMA5117](#)

For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)

# SMA5117

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
$V_{GSS}$	$\pm 20$	V
$I_D$	$\pm 7$	A
$I_{D(pulse)}$	$\pm 15$ ( $PW \leq 1ms, Du \leq 1\%$ )	A
$E_{AS}^*$	120	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
$\theta_{j-a}$	31.2 (Junction-Air, $T_a=25^\circ\text{C}$ , with all circuits operating)	$^\circ\text{C/W}$
$\theta_{j-c}$	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	$^\circ\text{C}$

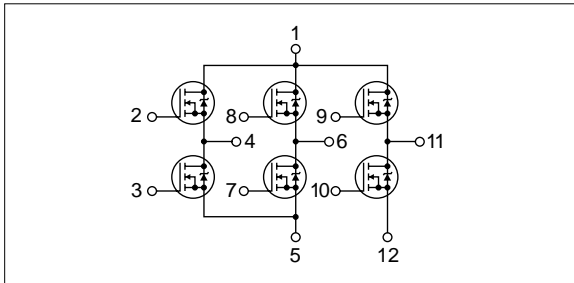
\* :  $V_{DD}=25V, L=4.4mH, I_D=7A$ , unclamped,  $R_G=50\Omega$ , see Fig. E on page 15.

## Electrical characteristics

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

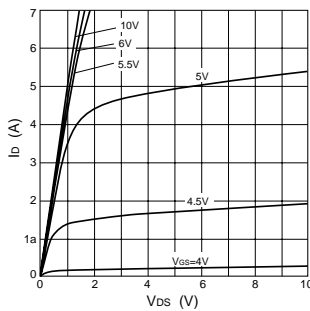
Symbol	Specification			Unit	Conditions
	min	typ	max		
$V_{(BR)DSS}$	250			V	$I_D=100\mu A, V_{GS}=0V$
$I_{GSS}$			$\pm 100$	nA	$V_{GS}=\pm 20V$
$I_{DSS}$			100	$\mu A$	$V_{DS}=250V, V_{GS}=0V$
$V_{TH}$	2.0		4.0	V	$V_{DS}=10V, I_D=1mA$
$R_{e(yfs)}$	4.5	6.5		S	$V_{DS}=10V, I_D=3.5A$
$R_{DS(ON)}$		0.2	0.25	$\Omega$	$V_{GS}=10V, I_D=3.5A$
$C_{iss}$		850		pF	$V_{DS}=10V, f=1.0MHz, V_{GS}=0V, I_D=3.5A, V_{DD} \div 100V, R_L=28.6\Omega, V_{GS}=10V$ , see Fig. 3 on page 16.
$C_{oss}$		550		pF	
$C_{rss}$		250		pF	
$t_{d(on)}$		20		ns	
$t_r$		25		ns	
$t_{d(off)}$		90		ns	
$t_f$		70		ns	
$V_{SD}$		1.1	1.5	V	$I_{SD}=7A, V_{GS}=0V$
$t_{rr}$		85		ns	$I_{SD}=3.5A, V_{GS}=0V, di/dt=100A/\mu s$

## Equivalent circuit diagram

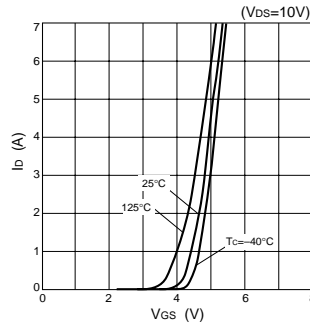


## Characteristic curves

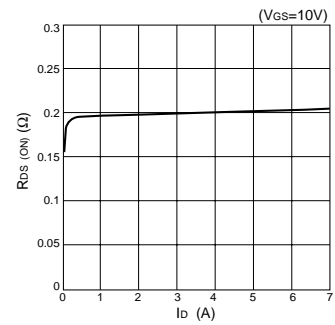
$I_D$ - $V_{DS}$  Characteristics (Typical)



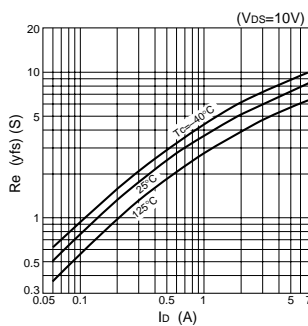
$I_D$ - $V_{GS}$  Characteristics (Typical)



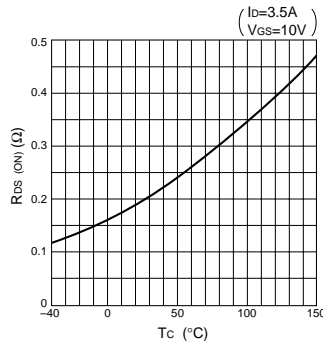
$R_{DS(ON)}$ - $I_D$  Characteristics (Typical)



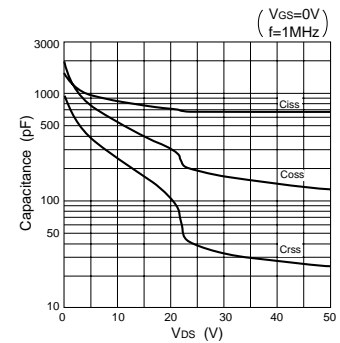
$R_{e(yfs)}$ - $I_D$  Characteristics (Typical)



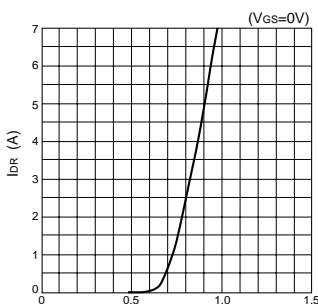
$R_{DS(ON)}$ - $T_c$  Characteristics (Typical)



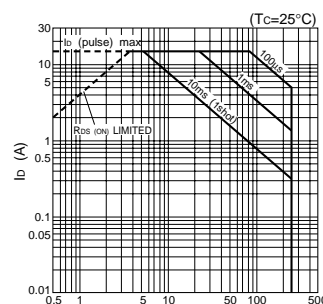
Capacitance- $V_{DS}$  Characteristics (Typical)



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



Safe Operating Area (SOA)



$P_T$ - $T_a$  Characteristics

