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# SLA5059

N-channel + P-channel  
 3-phase motor drive

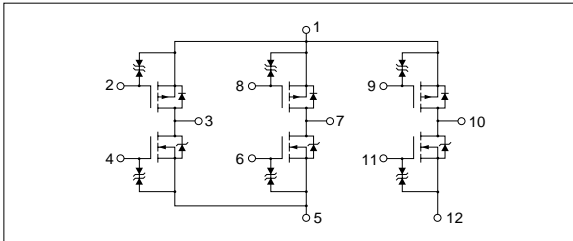
External dimensions SLA (12-pin)

## Absolute maximum ratings

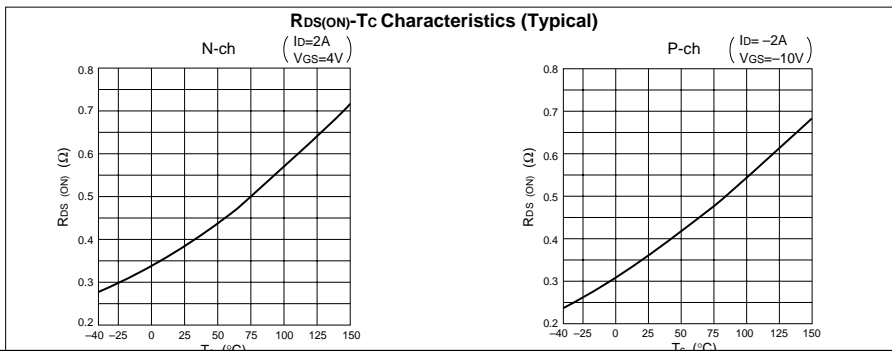
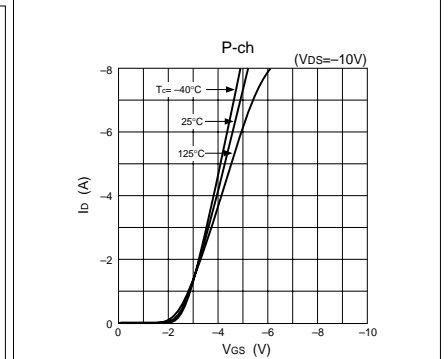
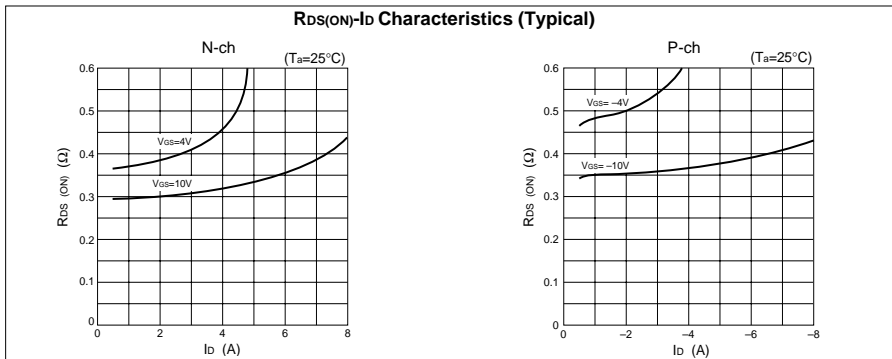
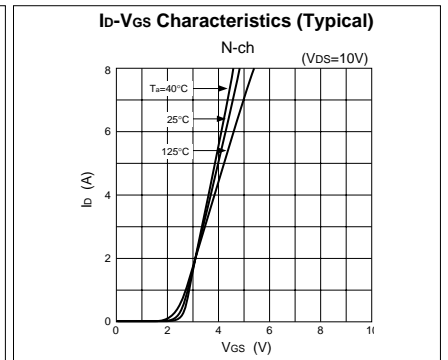
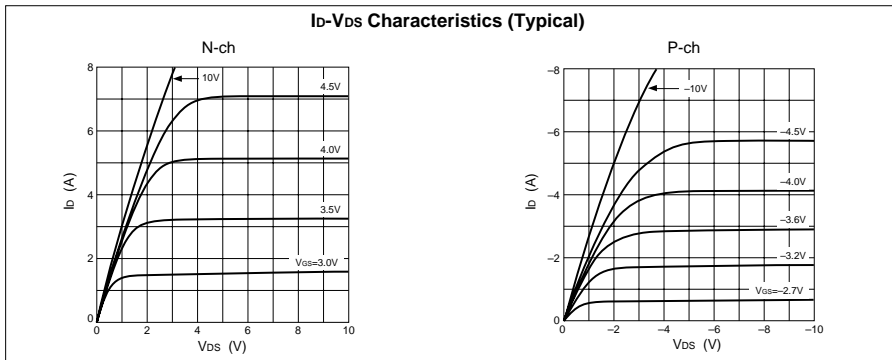
( $T_a=25^\circ\text{C}$ )

Symbol	Ratings		Unit
	N channel	P channel	
$V_{DSS}$	60	-60	V
$V_{GSS}$	$\pm 20$	$\mp 20$	V
$I_D$	4	-4	A
$I_{D(pulse)}$	8 (PW $\leq$ 1ms, Duty $\leq$ 25%)	-8 (PW $\leq$ 1ms, Duty $\leq$ 25%)	A
$P_T$	5 ( $T_a=25^\circ\text{C}$ , with all circuits operating, without heatsink)		W
	30 ( $T_c=25^\circ\text{C}$ , with all circuits operating, with infinite heatsink)		W
$\theta_{j-a}$	25 (Junction-Air, $T_a=25^\circ\text{C}$ , with all circuits operating)		$^\circ\text{C/W}$
$\theta_{j-c}$	4.17 (Junction-Case, $T_c=25^\circ\text{C}$ , with all circuits operating)		$^\circ\text{C/W}$
Tch	150		$^\circ\text{C}$
Tstg	-40 to +150		$^\circ\text{C}$

## Equivalent circuit diagram



## Characteristic curves



## Electrical characteristics

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

Symbol	N channel					P channel				
	Specification			Unit	Conditions	Specification			Unit	Conditions
	min	typ	max			min	typ	max		
$V_{(BR)DSS}$	60			V	$I_D=100\mu\text{A}, V_{GS}=0\text{V}$	-60			V	$I_D=-100\mu\text{A}, V_{GS}=0\text{V}$
$I_{GSS}$			$\pm 10$	$\mu\text{A}$	$V_{GS}=\pm 20\text{V}$			$\mp 10$	$\mu\text{A}$	$V_{GS}=\mp 20\text{V}$
$I_{DSS}$			100	$\mu\text{A}$	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			-100	$\mu\text{A}$	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}$
$V_{TH}$	1.0		2.0	V	$V_{DS}=10\text{V}, I_D=250\mu\text{A}$	-1.0		-2.0	V	$V_{DS}=-10\text{V}, I_D=-250\mu\text{A}$
$R_{e(yfs)}$		2.5		S	$V_{DS}=10\text{V}, I_D=2\text{A}$		3		S	$V_{DS}=-10\text{V}, I_D=-2\text{A}$
$R_{DS(ON)}$			0.55	$\Omega$	$V_{GS}=4\text{V}, I_D=2\text{A}$			0.55	$\Omega$	$V_{GS}=-10\text{V}, I_D=-2\text{A}$
$C_{iss}$		150		pF	$V_{DS}=10\text{V}, f=1.0\text{MHz}, V_{GS}=0\text{V}$		320		pF	$V_{DS}=-10\text{V}, f=1.0\text{MHz}, V_{GS}=0\text{V}$
$C_{oss}$		70		pF			130		pF	
$C_{rss}$		15		pF			40		pF	
$t_{d(on)}$		12		ns	$I_D=2\text{A}, V_{DD}\div 20\text{V}, R_L=10\Omega, V_{GS}=5\text{V},$ see Fig. 3 on page 16.		20		ns	$I_D=-2\text{A}, V_{DD}\div -20\text{V}, R_L=10\Omega, V_{GS}=-5\text{V},$ see Fig. 4 on page 16.
$t_r$		40		ns			95		ns	
$t_{d(off)}$		40		ns			70		ns	
$t_f$		25		ns			60		ns	
$V_{SD}$		1.2		V		$I_{SD}=4\text{A}, V_{GS}=0\text{V}$		-1.1		
$t_{rr}$		75		ns	$I_{SD}=2\text{A}, V_{GS}=0\text{V}, di/dt=100\text{A}/\mu\text{s}$		75		ns	$I_{SD}=-2\text{A}, V_{GS}=0\text{V}, di/dt=100\text{A}/\mu\text{s}$

## Characteristic curves

