SLA5022

PNP Darlington + N-channel MOSFET

3-phase motor drive

External dimensions Ⓐ···SLA

Absolute maximum ratings

(Ta=25°C)

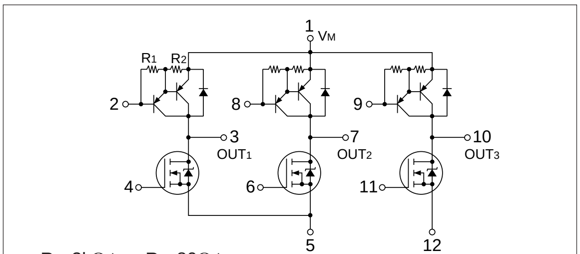
Symbol	Ratings	Unit
V_M	60	V
I_O	±6 (PW≤100ms)	A
I_{OP}	±10 (PW≤1ms)	A
V_{GSS}	±10	V
I_B	–0.5	A
P_T	5 (Ta=25°C)	W
	35 (Tc=25°C)	
$\theta_{j\text{-}a}$	25	°C/W
$\theta_{j\text{-}c}$	3.57	°C/W
V_{ISO}	1000 (Between fin and lead pin, AC)	Vrms
T_j	150	°C
T_{stg}	–40 to +150	°C

Electrical characteristics (Sink : N channel MOSFET)

(Ta=25°C)

Symbol	Specification			Unit	Conditions
	min	typ	max		
$V_{(BR)DSS}$	60			V	I_D=250μA, V_{GS}=0V
I_{GSS}			±500	nA	V_{GS}=±10V
I_{DSS}			250	μA	V_{DS}=60V, V_{GS}=0V
V_{TH}	1.0		2.0	V	V_{DS}=10V, I_D=250μA
Re(yfs)	3.1	4.6		S	V_{DS}=10V, I_D=4A
$R_{DS(ON)}$		0.17	0.22	W	V_{GS}=10V, I_D=4A
		0.25	0.30		V_{GS}=4V, I_D=4A
C_{iss}		400		pF	V_{DS}=25V, f=1.0MHz, V_{GS}=0V
C_{oss}		160		pF	
t_{on}		80		ns	I_D=4A, V_{DD}=30V, V_{GS}=5V
t_{off}		50		ns	
V_{SD}		1.1	1.5	V	I_{SD}=4A, V_{GS}=0V
t_{rr}		150		ns	I_F=±100mA

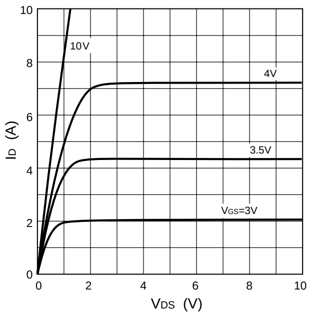
■Equivalent circuit diagram



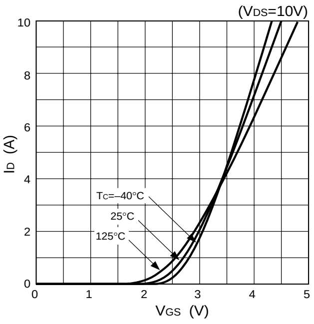
R1: 3kΩ typ R2: 80Ω typ

Characteristic curves (N-channel)

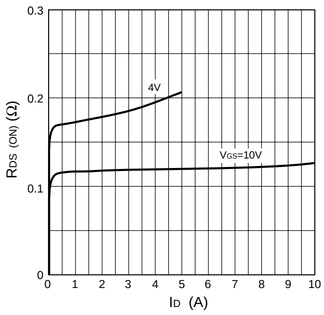
VDS-ID Characteristics (Typical)



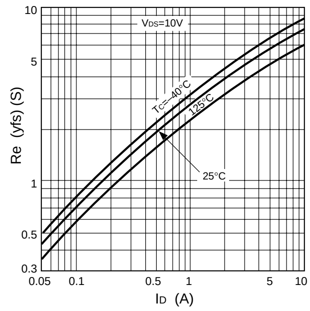
VGS-ID Temperature Characteristics (Typical)



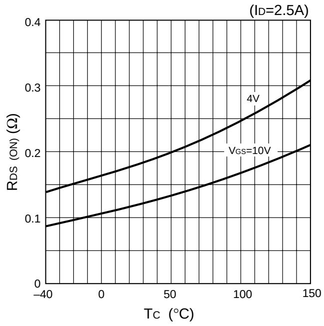
IDS-RDS(ON) Characteristics (Typical)



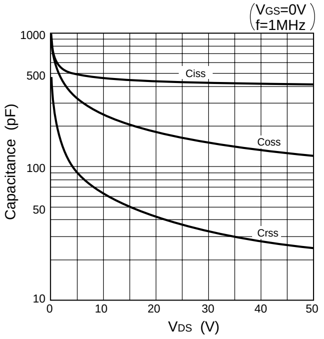
ID-Re(yfs) Temperature Characteristics (Typical)



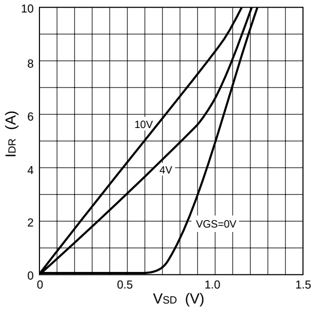
TC-RDS(ON) Characteristics (Typical)



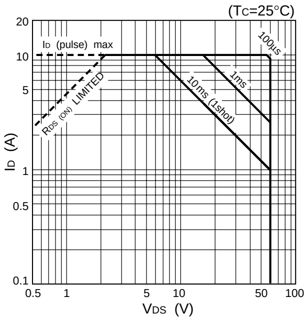
VDS-Cpacitance Characteristics (Typical)



VSD-IDR Characteristics (Typical)



Safe Operating Area (SOA)



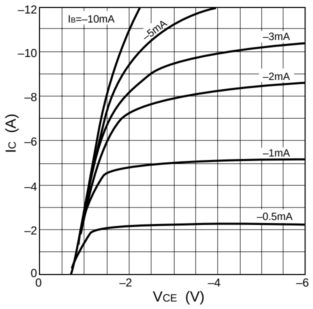
Electrical characteristics (Source: PNP transistor)

(Ta=25°C)

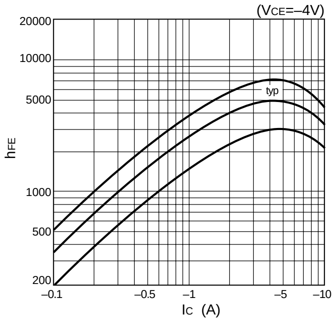
Symbol	Specification			Unit	Conditions
	min	typ	max		
I_{CBO}			–10	μA	V_{CB}=–60V
I_{EBO}	–1		–5	mA	V_{EB}=–6V
V_{CEO}	–60			V	I_C=–25mA
h_{FE}	2000	5000	12000		V_{CE}=–4V, I_C=–4A
V_{CE}(sat)			–1.5	V	I_C=–4A, I_B=–10mA
V_{BE}(sat)			–2.0	V	
V_{FEC}			2.0	V	I_{FEC}=4A
t_{rr}		1.0		μs	I_F=±0.5A
t_{on}		1.0		μs	V_{CC}≒–25V, I_C=–4A, I_{B1}=–I_{B2}=–10mA
t_{stg}		1.4		μs	
t_f		0.6		μs	
f_T		120		MHz	V_{CE}=–12V, I_E=1A
C_{ob}		150		pF	V_{CB}=–10V, f=1MHz

Characteristic curves (PNP)

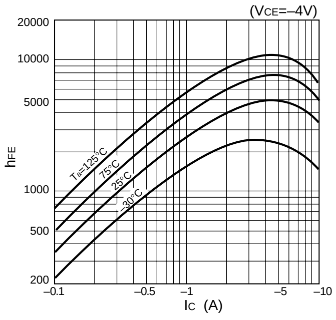
I_C-V_{CE} Characteristics (Typical)



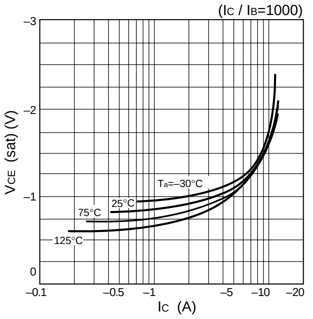
h_{FE}-I_C Characteristics (Typical)



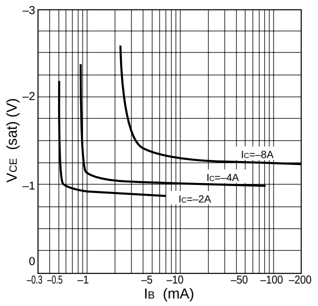
h_{FE}-I_C Temperature Characteristics (Typical)



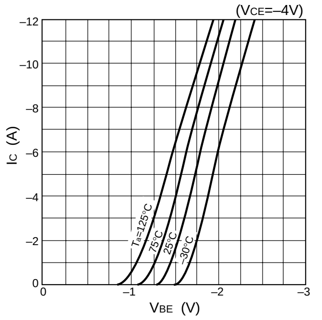
V_{CE}(sat)-I_C Temperature Characteristics (Typical)



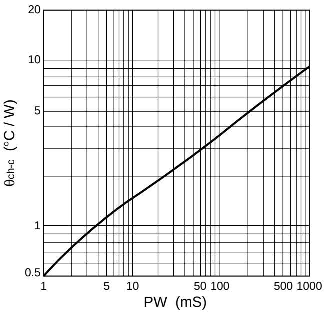
V_{CE}(sat)-I_B Characteristics (Typical)



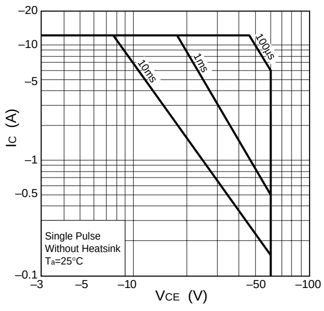
I_C-V_{BE} Temperature Characteristics (Typical)



$\theta_{j\text{-}a}$-PW Characteristics



Safe Operating Area (SOA)



P_T-T_a Characteristics