SLA5054

N-channel
General purpose

External dimensions Ⓐ ··· SLA (15-pin)

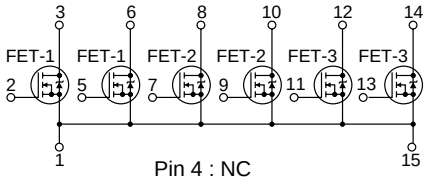
Absolute maximum ratings

(Ta=25°C)

Symbol	Ratings			Unit
	FET1	FET2	FET3	
V_{DSS}	150			V
V_{GSS}	+20, –10			V
I_D	±7	±5	±7	A
$I_{D(pulse)}$*1	±15	±10	±15	A
E_{AS}*2	15			mJ
I_{AS}	5			A
P_T	5 (T_a=25°C, with all circuits operating, without heatsink)			W
	35 (T_c=25°C, with all circuits operating, with infinite heatsink)			W
θ j-a	25 (Junction-Air, T_a=25°C, with all circuits operating)			°C/W
θ j-c	3.57 (Junction-Case, T_c=25°C, with all circuits operating)			°C/W
V_{ISO}	1000 (Between fin and lead pin, AC)			Vrms
Tch	150			°C
Tstg	–40 to +150			°C

*1 : PW≤100μs, duty≤50%
*2 : V_{DD}=25V, L=1.0mH, I_L=5A unclamped, R_G=50Ω, see Fig. E on page 15.

■Equivalent circuit diagram



Pin 4 : NC

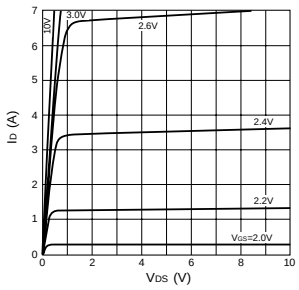
Electrical characteristics

(Ta=25°C)

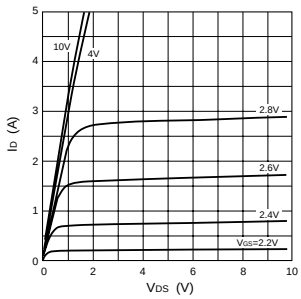
Symbol	FET1					FET2					FET3				
	Specification			Unit	Conditions	Specification			Unit	Conditions	Specification			Unit	Conditions
	min	typ	max			min	typ	max			min	typ	max		
$V_{(BR)DSS}$	150			V	I_D=100μA, V_{GS}=0V	150			V	I_D=100μA, V_{GS}=0V	150			V	I_D=100μA, V_{GS}=0V
I_{GSS}			100	nA	V_{GS}=20V			100	nA	V_{GS}=20V			100	nA	V_{GS}=20V
I_{DSS}			100	μA	V_{DS}=150V, V_{GS}=0V			100	μA	V_{DS}=150V, V_{GS}=0V			100	μA	V_{DS}=150V, V_{GS}=0V
V_{TH}	1.0		2.0	V	V_{DS}=10V, I_D=250μA	1.0		2.0	V	V_{DS}=10V, I_D=250μA	1.0		2.0	V	V_{DS}=10V, I_D=250μA
$Re_{(yfs)}$	7	12		S	V_{DS}=10V, I_D=3.5A	3	5.5		S	V_{DS}=10V, I_D=2.5A	4	9		S	V_{DS}=10V, I_D=3.5A
$R_{DS(ON)}$		80	105	mΩ	V_{GS}=10V, I_D=3.5A		330	440	mΩ	V_{GS}=10V, I_D=2.5A		150	200	mΩ	V_{GS}=10V, I_D=3.5A
		85	115	mΩ	V_{GS}=4V, I_D=3.5A		370	480	mΩ	V_{GS}=4V, I_D=2.5A		170	230	mΩ	V_{GS}=4V, I_D=3.5A
Ciss		1900		pF	V_{DS}=10V,		380		pF	V_{DS}=10V,		870		pF	V_{DS}=10V,
Coss		630		pF	f=1.0MHz,		95		pF	f=1.0MHz,		320		pF	f=1.0MHz,
Crss		420		pF	V_{GS}=0V		25		pF	V_{GS}=0V		210		pF	V_{GS}=0V
$td_{(on)}$		35		ns	I_D=3.5A,		25		ns	I_D=2.5A,		25		ns	I_D=3.5A,
tr		70		ns	V_{DD}≒70V,		50		ns	V_{DD}≒70V,		55		ns	V_{DD}≒70V,
$td_{(off)}$		140		ns	R_L=20Ω,		55		ns	R_L=28Ω,		80		ns	R_L=20Ω,
tf		90		ns	V_{GS}=5V, see Fig.3 on page 16.		40		ns	V_{GS}=5V, see Fig.3 on page 16.		50		ns	V_{GS}=5V, see Fig.3 on page 16.
V_{SD}		1.0	1.5	V	I_{SD}=7A, V_{GS}=0V		1.1	1.5	V	I_{SD}=5A, V_{GS}=0V		1.0	1.5	V	I_{SD}=7A, V_{GS}=0V
trr		620		ns	I_F=±100mA		180		ns	I_F=±100mA		500		ns	I_F=±100mA

Characteristic curves

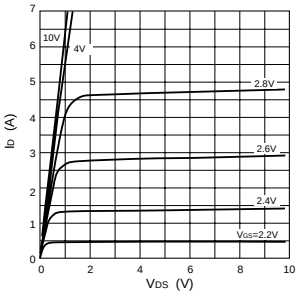
I_D-V_{DS} Characteristics (Typical) FET1



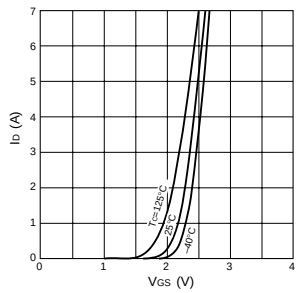
FET2



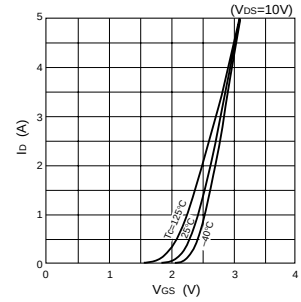
FET3



I_D-V_{GS} Characteristics (Typical) FET1



FET2



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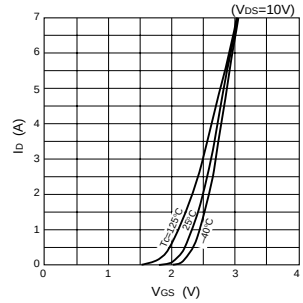
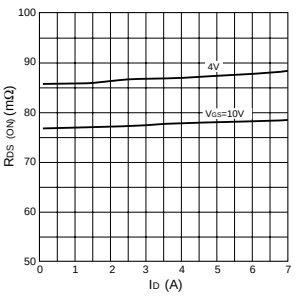
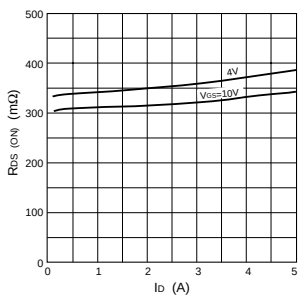


$R_{DS(ON)}$-I_D Characteristics (Typical) FET1



FET2



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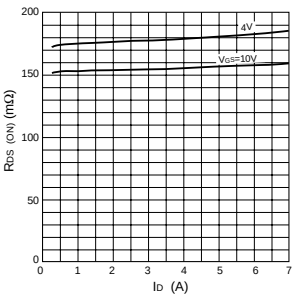
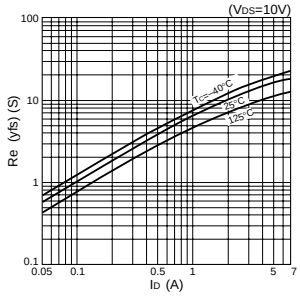
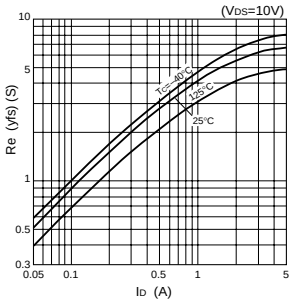


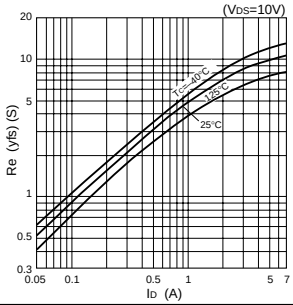
Re(yfs)-ID Characteristics (Typical) **FET1**



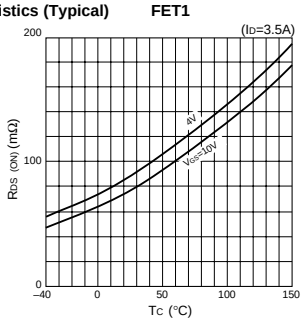
FET2



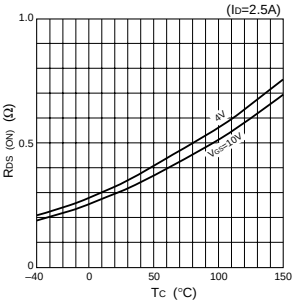
FET3



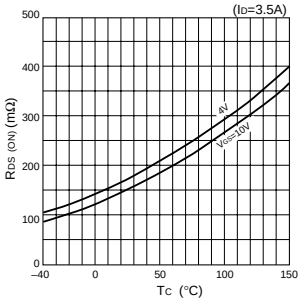
RDS(ON)-TC Characteristics (Typical) **FET1**



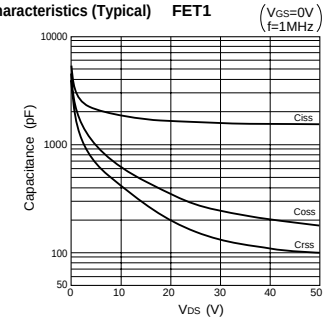
FET2



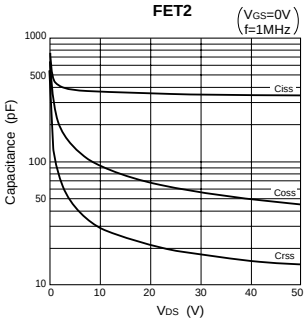
FET3



Capacitance-VDS Characteristics (Typical) **FET1**



FET2



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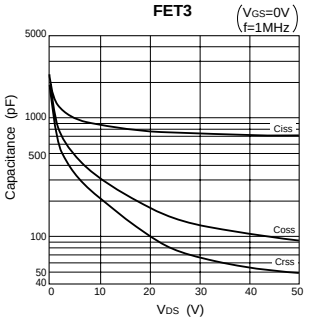
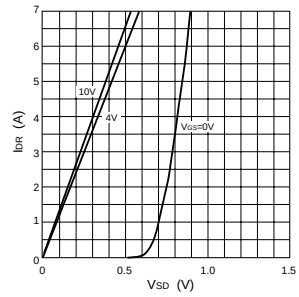
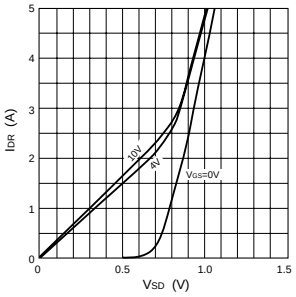


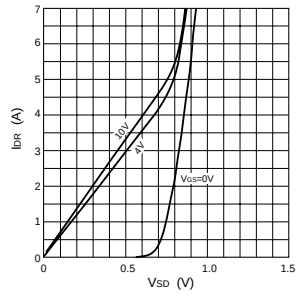
IDR-VSD Characteristics (Typical) **FET1**



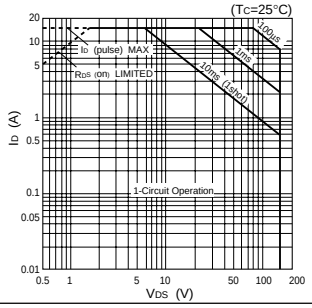
FET2



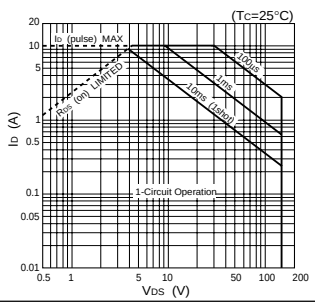
FET3



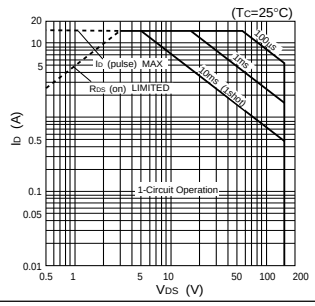
Safe Operating Area (SOA) **FET1**



FET2



FET3



PT-Ta Characteristics