

### Absolute maximum ratings

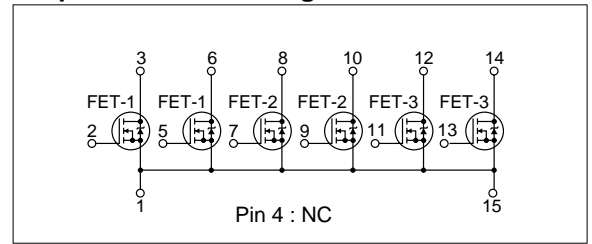
( $T_a=25^\circ\text{C}$ )

Symbol	Ratings			Unit
	FET1	FET2	FET3	
$V_{DSS}$		150		V
$V_{GS}$		+20, -10		V
$I_D$	$\pm 7$	$\pm 5$	$\pm 7$	A
$I_D(\text{pulse})^{*1}$	$\pm 15$	$\pm 10$	$\pm 15$	A
$E_{AS}^{*2}$		15		mJ
$I_{AS}$		5		A
$P_T$	5 ( $T_a=25^\circ\text{C}$ , with all circuits operating, without heatsink)			W
	35 ( $T_c=25^\circ\text{C}$ , with all circuits operating, with infinite heatsink)			W
$\theta_{j-a}$	25 (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)			$^\circ\text{C/W}$
$V_{ISO}$	1000 (Between fin and lead pin, AC)			Vrms
$T_{ch}$	150			$^\circ\text{C}$
$T_{stg}$	-40 to +150			$^\circ\text{C}$

\*1 :  $PW \leq 100\mu\text{s}$ ,  $duty \leq 50\%$

\*2 :  $V_{DD}=25\text{V}$ ,  $L=1.0\text{mH}$ ,  $I_L=5\text{A}$  unclamped,  $R_G=50\Omega$ , see Fig. E on page 15.

### Equivalent circuit diagram



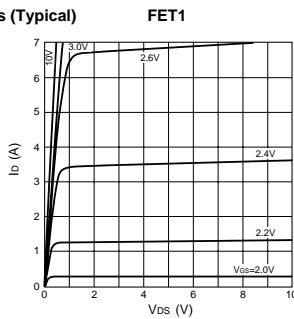
### Electrical characteristics

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

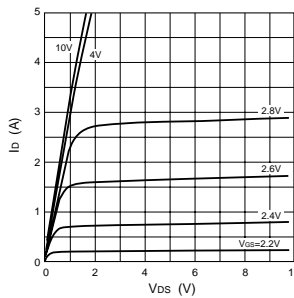
Symbol	FET1					FET2					FET3					
	Specification			Unit	Conditions	Specification			Unit	Conditions	Specification			Unit	Conditions	
	min	typ	max			min	typ	max			min	typ	max			
$V_{(BR)DSS}$	150			V	$I_D=100\mu\text{A}$ , $V_{GS}=0\text{V}$	150			V	$I_D=100\mu\text{A}$ , $V_{GS}=0\text{V}$	150			V	$I_D=100\mu\text{A}$ , $V_{GS}=0\text{V}$	
$I_{GSS}$			100	nA	$V_{GS}=20\text{V}$			100	nA	$V_{GS}=20\text{V}$			100	nA	$V_{GS}=20\text{V}$	
$I_{DSS}$			100	$\mu\text{A}$	$V_{DS}=150\text{V}$ , $V_{GS}=0\text{V}$			100	$\mu\text{A}$	$V_{DS}=150\text{V}$ , $V_{GS}=0\text{V}$			100	$\mu\text{A}$	$V_{DS}=150\text{V}$ , $V_{GS}=0\text{V}$	
$V_{TH}$	1.0		2.0	V	$V_{DS}=10\text{V}$ , $I_D=250\mu\text{A}$	1.0		2.0	V	$V_{DS}=10\text{V}$ , $I_D=250\mu\text{A}$	1.0		2.0	V	$V_{DS}=10\text{V}$ , $I_D=250\mu\text{A}$	
$R_{\theta(j-fs)}$	7			S	$V_{DS}=10\text{V}$ , $I_D=3.5\text{A}$	3	5.5		S	$V_{DS}=10\text{V}$ , $I_D=2.5\text{A}$	4	9		S	$V_{DS}=10\text{V}$ , $I_D=3.5\text{A}$	
$R_{DS(ON)}$		80	105	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=3.5\text{A}$	330	440	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=2.5\text{A}$	150	200	m $\Omega$	$V_{GS}=10\text{V}$ , $I_D=3.5\text{A}$			
		85	115	m $\Omega$	$V_{GS}=4\text{V}$ , $I_D=3.5\text{A}$	370	480	m $\Omega$	$V_{GS}=4\text{V}$ , $I_D=2.5\text{A}$	170	230	m $\Omega$	$V_{GS}=4\text{V}$ , $I_D=3.5\text{A}$			
$C_{ISS}$	1900			pF	$V_{DS}=10\text{V}$ , $f=1.0\text{MHz}$ , $V_{GS}=0\text{V}$	380			pF	$V_{DS}=10\text{V}$ , $f=1.0\text{MHz}$ , $V_{GS}=0\text{V}$	870			pF	$V_{DS}=10\text{V}$ , $f=1.0\text{MHz}$ , $V_{GS}=0\text{V}$	
$C_{OSS}$	630			pF		95			pF		320			pF		
$C_{RSS}$	420			pF		25			pF		210			pF		
$t_{d(ON)}$	35			ns	$I_D=3.5\text{A}$ , $V_{DD} \approx 70\text{V}$ , $R_L=20\Omega$ , $V_{GS}=5\text{V}$ , see Fig.3 on page 16.	25			ns	$I_D=2.5\text{A}$ , $V_{DD} \approx 70\text{V}$ , $R_L=28\Omega$ , $V_{GS}=5\text{V}$ , see Fig.3 on page 16.	25			ns	$I_D=3.5\text{A}$ , $V_{DD} \approx 70\text{V}$ , $R_L=20\Omega$ , $V_{GS}=5\text{V}$ , see Fig.3 on page 16.	
$t_r$	70			ns		50			ns		55			ns		
$t_{d(OFF)}$	140			ns		55			ns		80			ns		
$t_f$	90			ns		40			ns		50			ns		
$V_{SD}$	1.0	1.5		V	$I_{SD}=7\text{A}$ , $V_{GS}=0\text{V}$	1.1	1.5		V	$I_{SD}=5\text{A}$ , $V_{GS}=0\text{V}$	1.0	1.5		V	$I_{SD}=7\text{A}$ , $V_{GS}=0\text{V}$	
$t_{rr}$	620			ns	$I_F=\pm 100\text{mA}$	180			ns	$I_F=\pm 100\text{mA}$	500			ns	$I_F=\pm 100\text{mA}$	

### Characteristic curves

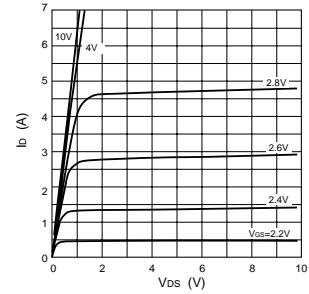
$I_D$ - $V_{DS}$  Characteristics (Typical)



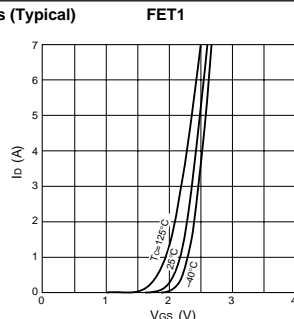
FET2



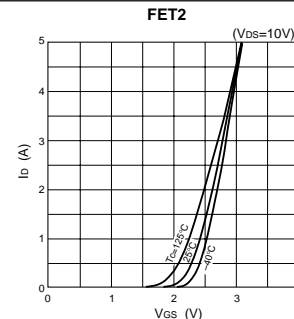
FET3



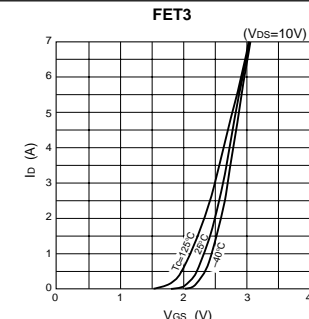
$I_D$ - $V_{GS}$  Characteristics (Typical)



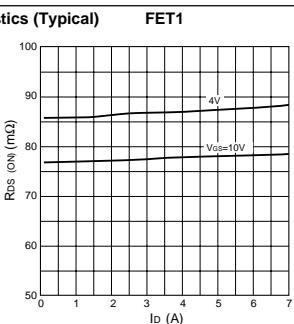
FET2



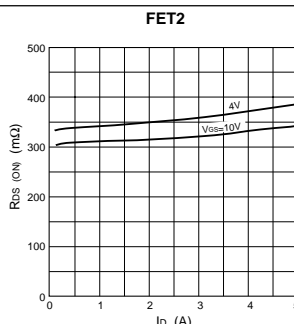
FET3



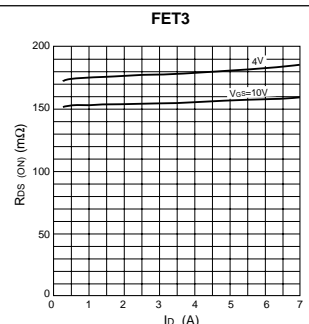
$R_{DS(ON)}$ - $I_D$  Characteristics (Typical)



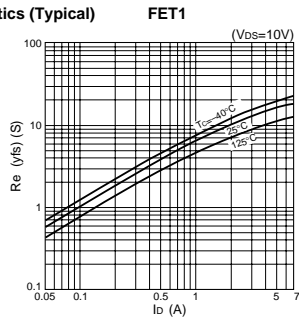
FET2



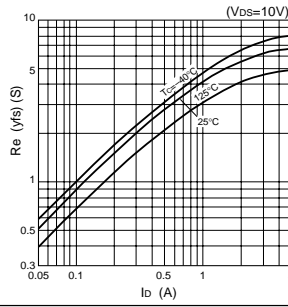
FET3



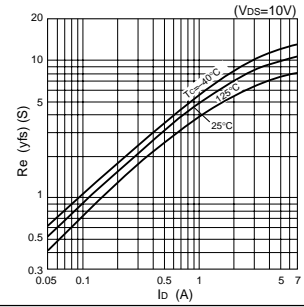
**Re(yfs)-Id Characteristics (Typical)**



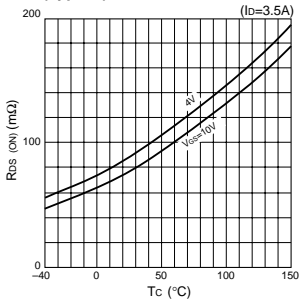
**FET2**



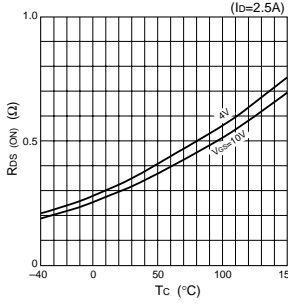
**FET3**



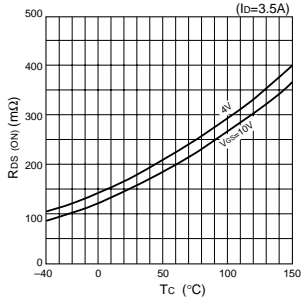
**Rds(on)-Tc Characteristics (Typical)**



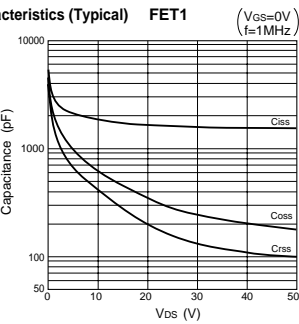
**FET2**



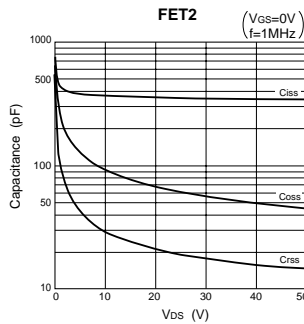
**FET3**



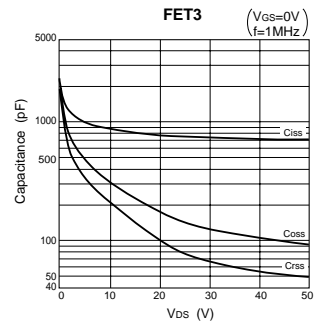
**Capacitance-Vds Characteristics (Typical)**



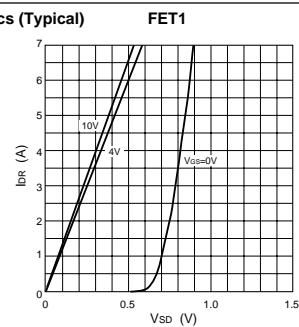
**FET2**



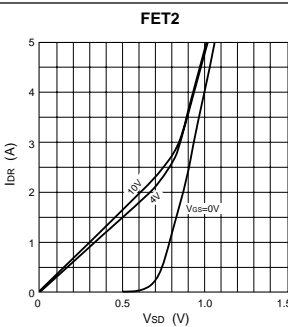
**FET3**



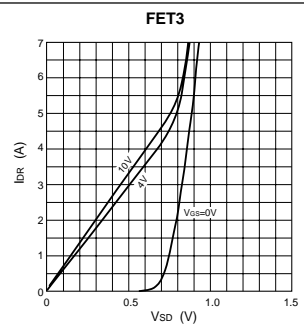
**Idr-Vsd Characteristics (Typical)**



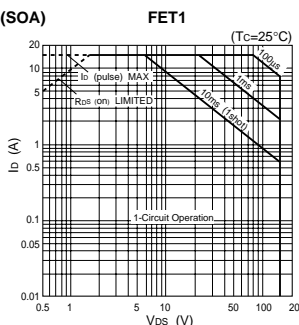
**FET2**



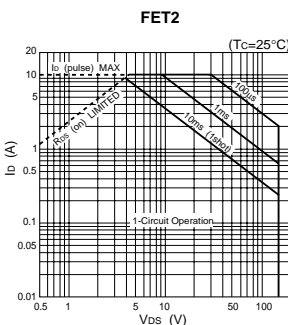
**FET3**



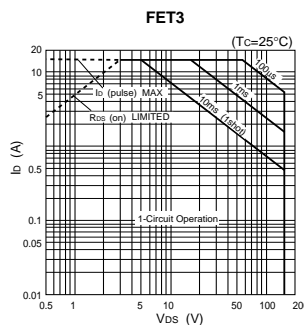
**Safe Operating Area (SOA)**



**FET2**



**FET3**



**Pr-Ta Characteristics**

