

### Absolute maximum ratings

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

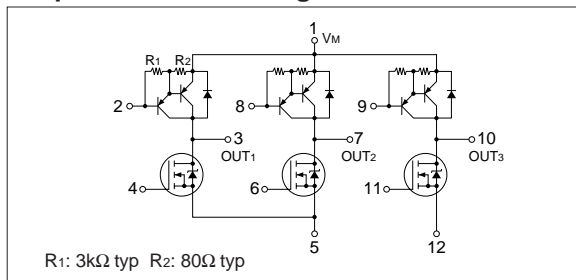
Symbol	Ratings	Unit
$V_M$	60	V
$I_o$	$\pm 6$ ( $PW \leq 100\text{ms}$ )	A
$I_{OP}$	$\pm 10$ ( $PW \leq 1\text{ms}$ )	A
$V_{GS}$	$\pm 10$	V
$I_B$	-0.5	A
$P_T$	5 ( $T_a=25^\circ\text{C}$ )	W
	35 ( $T_c=25^\circ\text{C}$ )	
$\theta_{j-a}$	25	$^\circ\text{C/W}$
$\theta_{j-c}$	3.57	$^\circ\text{C/W}$
$V_{ISO}$	1000 (Between fin and lead pin, AC)	$V_{rms}$
$T_j$	150	$^\circ\text{C}$
$T_{stg}$	-40 to +150	$^\circ\text{C}$

### Electrical characteristics (Sink : N channel MOSFET)

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

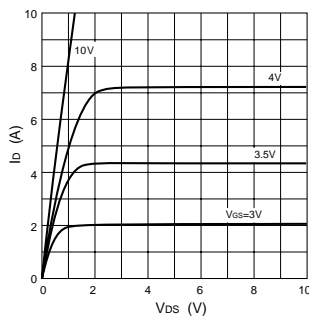
Symbol	Specification			Unit	Conditions
	min	typ	max		
$V_{(BR)DSS}$	60			V	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$
$I_{GSS}$			$\pm 500$	nA	$V_{GS}=\pm 10\text{V}$
$I_{DSS}$			250	$\mu\text{A}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$
$V_{TH}$	1.0		2.0	V	$V_{DS}=10\text{V}$ , $I_D=250\mu\text{A}$
$Re(yfs)$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

### Equivalent circuit diagram

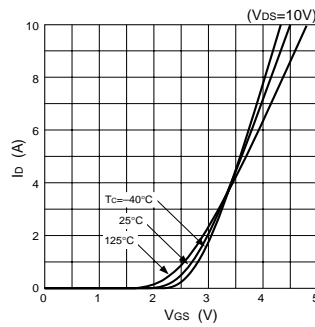


### Characteristic curves (N-channel)

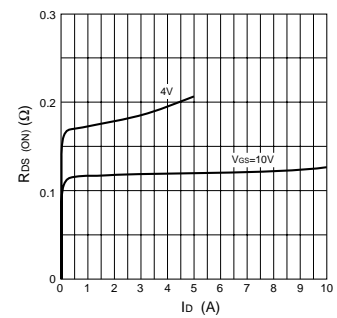
$V_{DS}-I_D$  Characteristics (Typical)



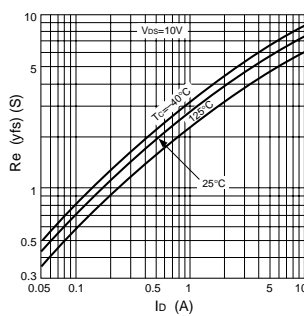
$V_{GS}-I_D$  Temperature Characteristics (Typical)



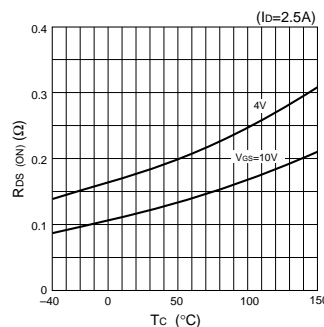
$I_{DS}-R_{DS(ON)}$  Characteristics (Typical)



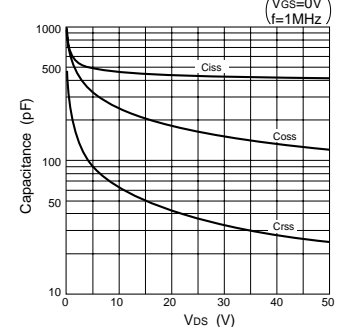
$I_D-Re(yfs)$  Temperature Characteristics (Typical)



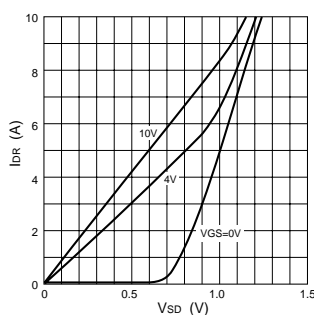
$T_c-R_{DS(ON)}$  Characteristics (Typical)



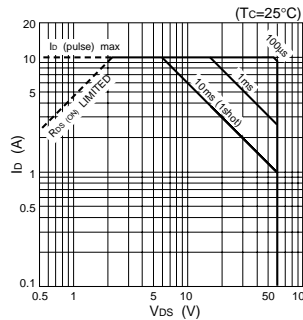
$V_{DS}-C$  Capacitance Characteristics (Typical)



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



Safe Operating Area (SOA)

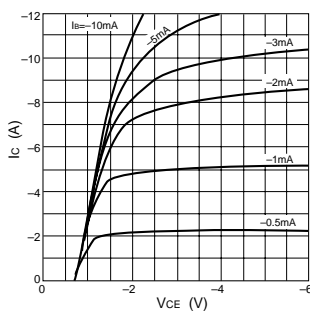


## Electrical characteristics (Source: PNP transistor) ( $T_a=25^\circ\text{C}$ )

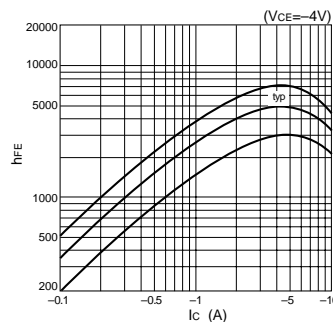
Symbol	Specification			Unit	Conditions
	min	typ	max		
$I_{CBO}$			-10	$\mu\text{A}$	$V_{CB}=-60\text{V}$
$I_{EBO}$	-1		-5	$\text{mA}$	$V_{EB}=-6\text{V}$
$V_{CEO}$	-60			$\text{V}$	$I_C=-25\text{mA}$
$h_{FE}$	2000	5000	12000		$V_{CE}=-4\text{V}$ , $I_C=-4\text{A}$
$V_{CE(sat)}$			-1.5	$\text{V}$	$I_C=-4\text{A}$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

## Characteristic curves (PNP)

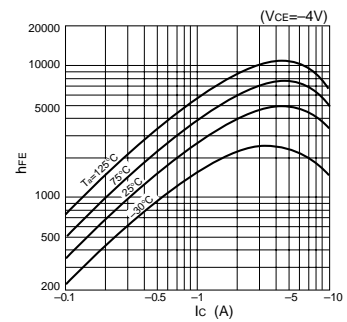
**$I_C$ - $V_{CE}$  Characteristics (Typical)**



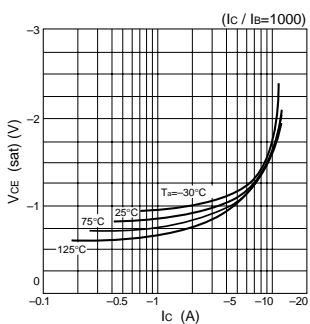
**$h_{FE}$ - $I_C$  Characteristics (Typical)**



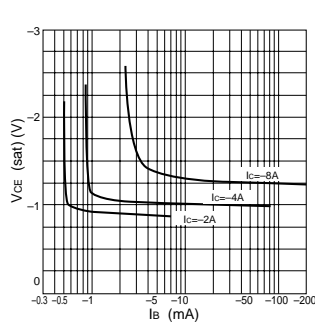
**$h_{FE}$ - $I_C$  Temperature Characteristics (Typical)**



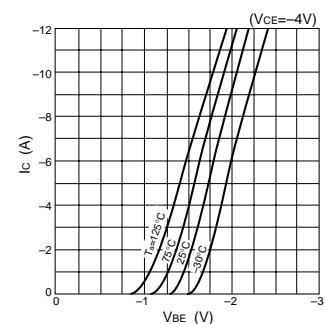
**$V_{CE(sat)}$ - $I_C$  Temperature Characteristics (Typical)**



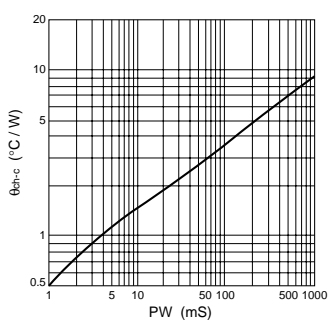
**$V_{CE(sat)}$ - $I_B$  Characteristics (Typical)**



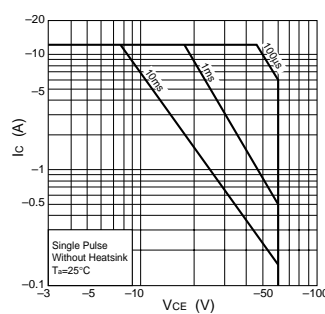
**$I_C$ - $V_{BE}$  Temperature Characteristics (Typical)**



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



**Safe Operating Area (SOA)**



**$P_T$ - $T_a$  Characteristics**

