

### Absolute maximum ratings

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

Symbol	Ratings	Unit
$V_{DSS}$	60	V
$V_{GS}$	$\pm 20$	V
$I_D$	10	A
$I_{D(pulse)}$	10 ( $PW \leq 1\text{ms}$ , $duty \leq 25\%$ )	A
$E_{AS}$	30	mJ
$P_T$	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)	
$\theta_{j-a}$	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)	$^\circ\text{C/W}$
$V_{ISO}$	1000 (Between fin and lead pin, AC)	Vrms
$T_{ch}$	150	$^\circ\text{C}$
$T_{stg}$	-40 to +150	$^\circ\text{C}$

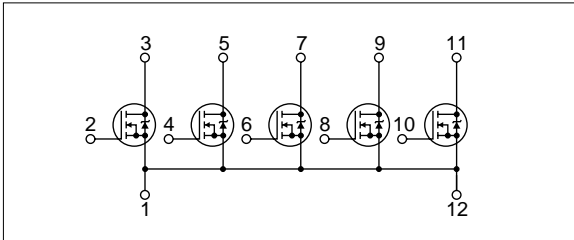
\* :  $V_{DD}=40\text{V}$ ,  $L=20\text{mH}$ ,  $I_D=1\text{A}$ , unclamped,  $R_G=50\Omega$ , see Fig. E on page 15.

### Electrical characteristics

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

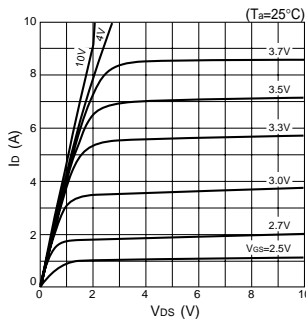
Symbol	Specification			Unit	Conditions
	min	typ	max		
$V_{(BR)DSS}$	60			V	$I_D=100\mu\text{A}$ , $V_{GS}=0\text{V}$
$I_{GSS}$			$\pm 100$	nA	$V_{GS}=\pm 20\text{V}$
$I_{DSS}$			100	$\mu\text{A}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$
$V_{TH}$	1.0	2.0		V	$V_{DS}=10\text{V}$ , $I_D=250\mu\text{A}$
$R_{e(yfs)}$	3.7	5.5		S	$V_{DS}=10\text{V}$ , $I_D=3\text{A}$
$R_{DS(ON)}$		0.16	0.22	$\Omega$	$V_{GS}=4\text{V}$ , $I_D=3\text{A}$
$C_{iss}$		320		pF	$V_{DS}=10\text{V}$ , $f=1.0\text{MHz}$ , $V_{GS}=0\text{V}$
$C_{oss}$		160		pF	
$C_{rss}$		35		pF	
$t_{d(ON)}$		16		ns	$I_D=3\text{A}$ , $V_{DD}=20\text{V}$ , $R_L=6.67\Omega$ , $V_{GS}=5\text{V}$ , see Fig. 3 on page 16.
$t_r$		65		ns	
$t_{d(OFF)}$		70		ns	
$t_f$		45		ns	
$t_{rr}$		65		ns	
$V_{SD}$		1.05	1.5	V	$I_{SD}=5\text{A}$ , $V_{GS}=0\text{V}$
			65	ns	$I_{SD}=3\text{A}$ , $V_{GS}=0\text{V}$ , $di/dt=100\text{A}/\mu\text{s}$

### Equivalent circuit diagram

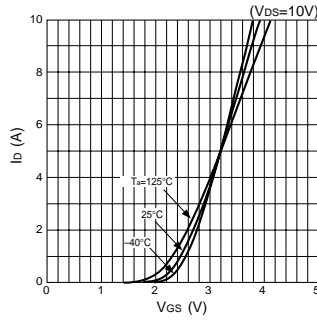


### Characteristic curves

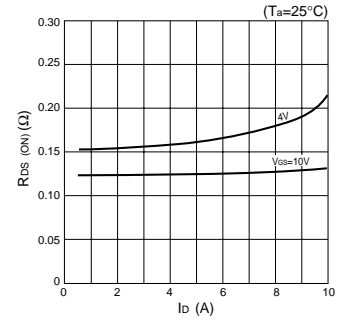
**$I_D$ - $V_{DS}$  Characteristics (Typical)**



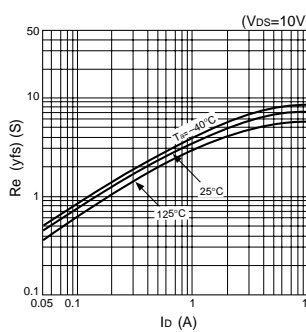
**$I_D$ - $V_{GS}$  Characteristics (Typical)**



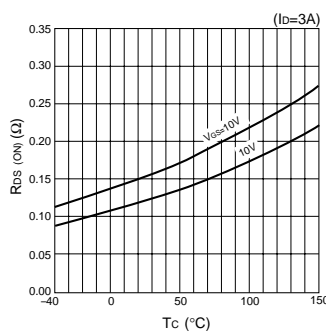
**$R_{DS(ON)}$ - $I_D$  Characteristics (Typical)**



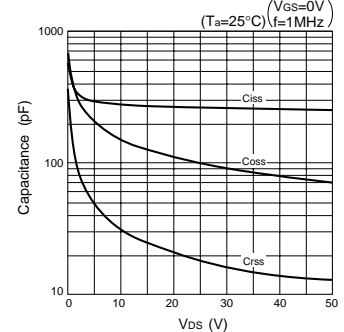
**$R_{e(yfs)}$ - $I_D$  Characteristics (Typical)**



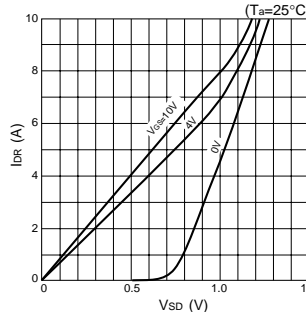
**$R_{DS(ON)}$ - $T_c$  Characteristics (Typical)**



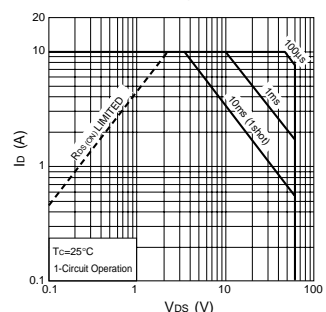
**Capacitance- $V_{DS}$  Characteristics (Typical)**



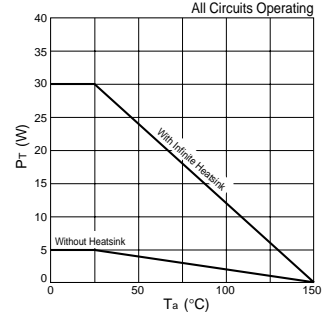
**$I_{DR}$ - $V_{SD}$  Characteristics (Typical)**



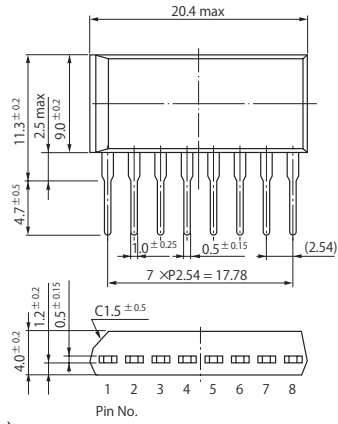
**Safe Operating Area (SOA)**



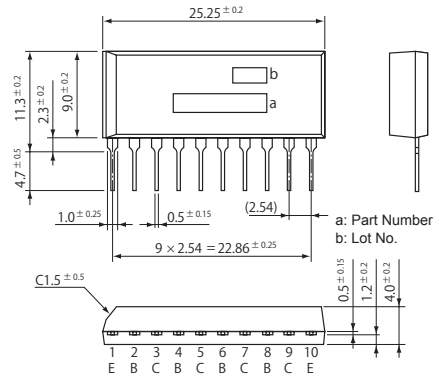
**$P_T$ - $T_a$  Characteristics**



• SIP 8 (STA8Pin)



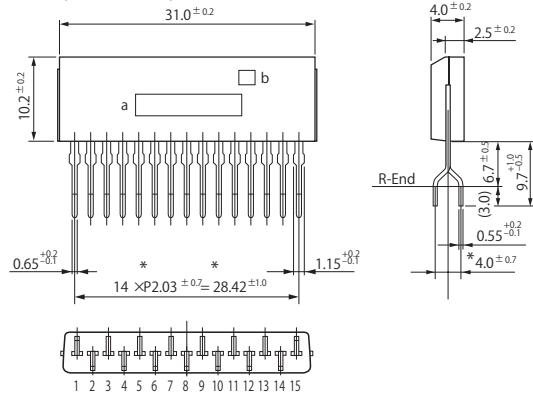
• SIP 10 (STA10Pin)



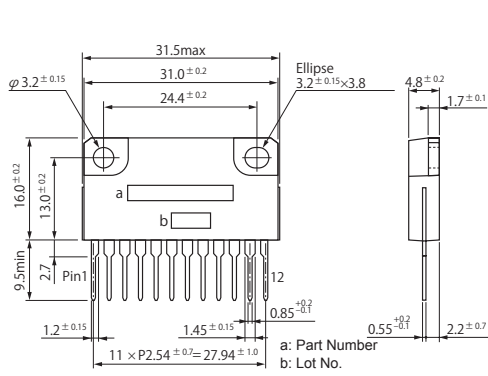
• SIP 12 (SMA12Pin)



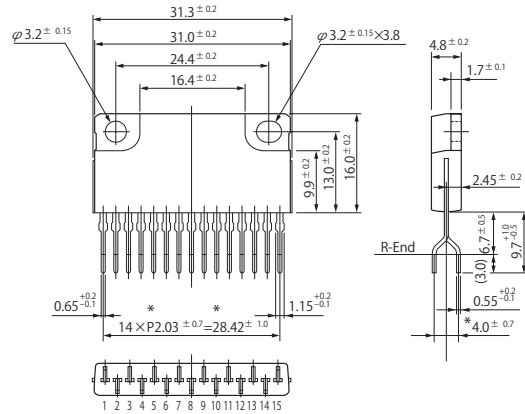
• SIP 15 (SMA15Pin)



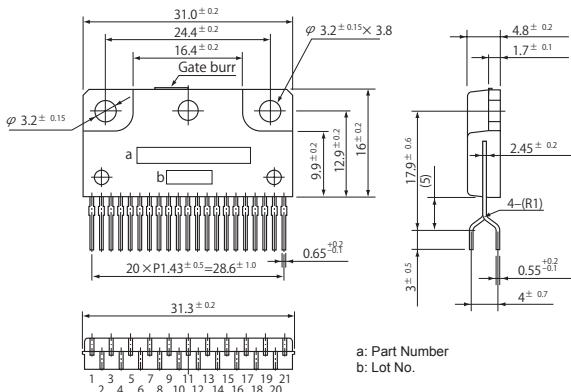
• SIP 12 with Fin (SLA12Pin)



• SIP 15 with Fin (SLA15Pin)



• SIP 21 with Fin (SLA21Pin)



(Unit:mm)