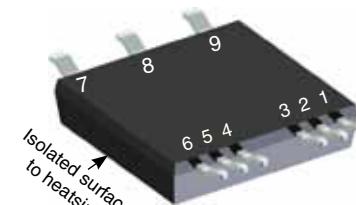
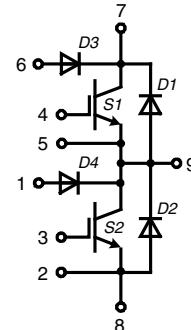


# XPT IGBT phaseleg

## ISOPLUS™

### Surface Mount Power Device

**I<sub>C25</sub>** = 43 A  
**V<sub>CES</sub>** = 1200 V  
**V<sub>CE(sat)</sub> typ** = 1.9 V



E72873

**IGBTs S1, S2**

Symbol	Conditions	Maximum Ratings		
V <sub>CES</sub>	T <sub>VJ</sub> = 25°C to 150°C	1200	V	
V <sub>GES</sub>		±20	V	
I <sub>C25</sub>	T <sub>C</sub> = 25°C	43	A	
I <sub>C80</sub>	T <sub>C</sub> = 80°C	30	A	
I <sub>CM</sub>	V <sub>GE</sub> = 15 V; R <sub>G</sub> = 39 Ω; T <sub>VJ</sub> = 125°C	75	A	
V <sub>CEK</sub>	RBSOA, clamped inductive load; L = 100 μH	V <sub>CES</sub>		
t <sub>sc</sub> (SCSOA)	V <sub>CE</sub> = 900 V; V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 39 Ω; T <sub>VJ</sub> = 125°C none repetitive	10	μs	
P <sub>tot</sub>	T <sub>C</sub> = 25°C	150	W	

**Symbol**    **Conditions****Characteristic Values**(T<sub>VJ</sub> = 25°C, unless otherwise specified)

		min.	typ.	max.
V <sub>CE(sat)</sub>	I <sub>C</sub> = 25 A; V <sub>GE</sub> = 15 V; T <sub>VJ</sub> = 25°C T <sub>VJ</sub> = 125°C		1.9 2.2	2.2 V V
V <sub>GE(th)</sub>	I <sub>C</sub> = 1 mA; V <sub>GE</sub> = V <sub>CE</sub>	5.4		6.5
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> ; V <sub>GE</sub> = 0 V; T <sub>VJ</sub> = 25°C T <sub>VJ</sub> = 125°C		200	2.1 mA μA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V; V <sub>GE</sub> = ± 20 V			500 nA
t <sub>d(on)</sub> t <sub>r</sub> t <sub>d(off)</sub> t <sub>f</sub> E <sub>on</sub> E <sub>off</sub> E <sub>(rec)off</sub>	Inductive load; T <sub>VJ</sub> = 125°C V <sub>CE</sub> = 600 V; I <sub>C</sub> = 25 A V <sub>GE</sub> = ±15 V; R <sub>G</sub> = 39 Ω		70 40 250 100 2.5 3.0 tbd	ns ns ns ns mJ mJ
C <sub>ies</sub> Q <sub>Gon</sub>	V <sub>CE</sub> = 25 V; V <sub>GE</sub> = 0 V; f = 1 MHz V <sub>CE</sub> = 600 V; V <sub>GE</sub> = 15 V; I <sub>C</sub> = 25 A		tbd 76	pF nC
R <sub>thJC</sub> R <sub>thJH</sub>	with heatsink compound (IXYS test setup)		0.85 0.95	K/W K/W

**Features**

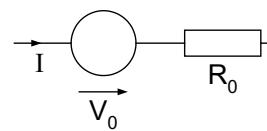
- XPT IGBT**
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
  - short tail current for optimized performance in resonant circuits
- Sonic™ diode**
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- V<sub>CEsat</sub> detection diode**
  - integrated into package
  - very fast diode
- Package**
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - PCB space saving
  - enlarged creepage towards heatsink
  - application friendly pinout
  - low inductive current path
  - high reliability

**Applications**

- Phaseleg**
  - buck-boost chopper
- Full bridge**
  - power supplies
  - induction heating
  - four quadrant DC drives
  - controlled rectifier
- Three phase bridge**
  - AC drives
  - controlled rectifier

**Diodes D1, D2**

Symbol	Conditions	Maximum Ratings		
I <sub>F25</sub>	T <sub>C</sub> = 25°C		40	A
I <sub>F80</sub>	T <sub>C</sub> = 80°C		27	A
Symbol	Conditions	Characteristic Values		
		(T <sub>VJ</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>F</sub>	I <sub>F</sub> = 20 A	T <sub>VJ</sub> = 25°C	1.9	2.4
		T <sub>VJ</sub> = 125°C	1.9	V
I <sub>RM</sub>	I <sub>F</sub> = 20 A; R <sub>G</sub> = 39 Ω; T <sub>VJ</sub> = 125°C		30	A
t <sub>rr</sub>			350	ns
E <sub>rec</sub>			0.85	mJ
V <sub>R</sub>	per diode			0.9
R <sub>thJC</sub>	with heatsink compound (IXYS test setup)		1.2	K/W
R <sub>thJH</sub>			1.5	K/W

**Equivalent Circuits for Simulation****Conduction**

IGBTs (typ. at V<sub>GE</sub> = 15 V; T<sub>J</sub> = 125°C)  
S1, S2 V<sub>o</sub> = 1.1 V; R<sub>0</sub> = 60 mΩ

Diodes (typ. at T<sub>J</sub> = 125°C)  
D1, D2 V<sub>o</sub> = 1.3 V; R<sub>0</sub> = 28 mΩ

**Diodes D3, D4**

Symbol	Conditions	Maximum Ratings		
V <sub>R</sub>	T <sub>C</sub> = 25°C to 150°C		1200	V
Symbol	Conditions	Characteristic Values		
		(T <sub>VJ</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>F</sub>	I <sub>F</sub> = 1 A	T <sub>VJ</sub> = 25°C	1.7	2.2
		T <sub>VJ</sub> = 125°C	1.5	V
I <sub>R</sub>	V <sub>R</sub> = 1200 V	T <sub>VJ</sub> = 25°C		2
		T <sub>VJ</sub> = 125°C	30	μA
I <sub>RM</sub>	I <sub>F</sub> = 1 A; dI <sub>F</sub> /dt = -100 A/μs; T <sub>VJ</sub> = 25°C		2.3	A
t <sub>rr</sub>			40	ns
V <sub>R</sub>		V <sub>R</sub> = 100 V; V <sub>GE</sub> = 0 V		

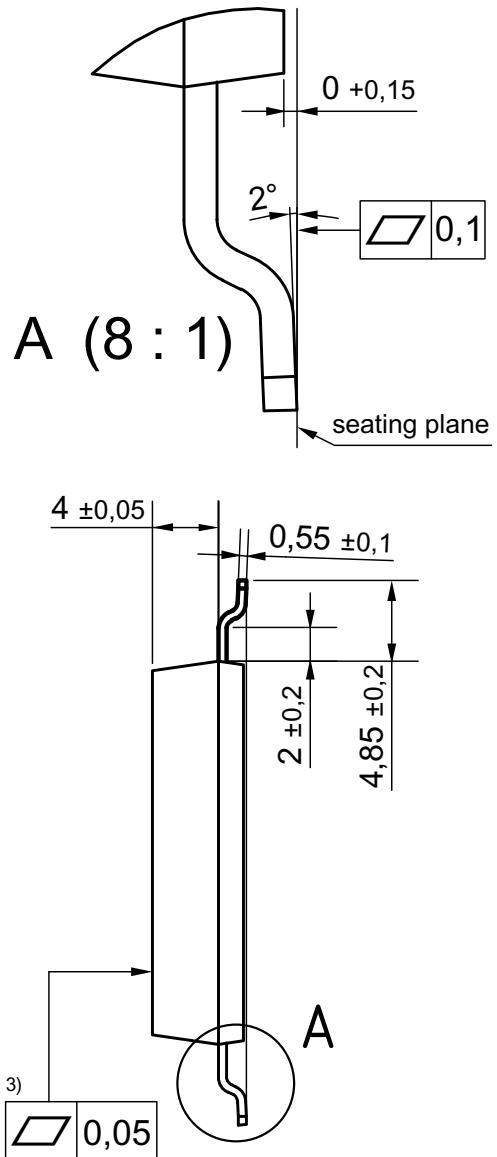
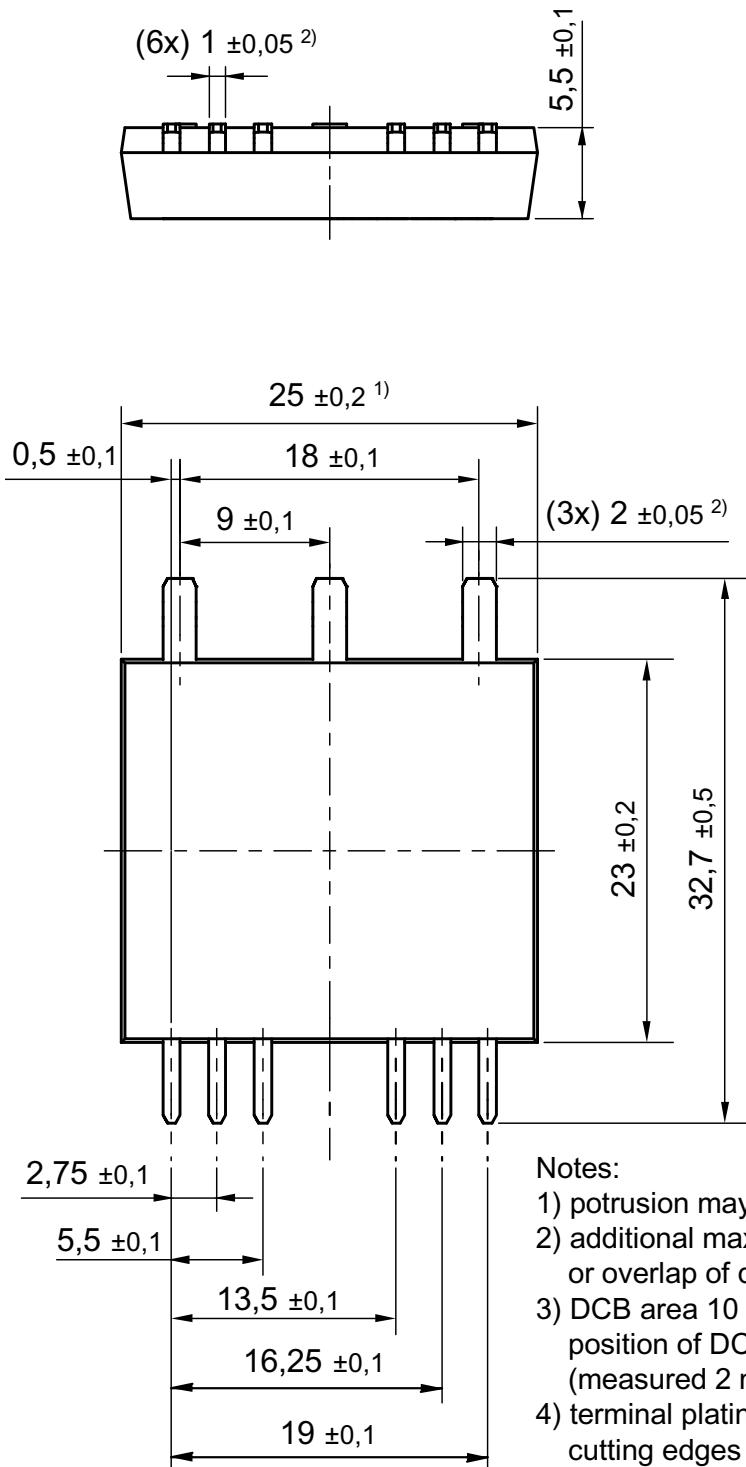
**Component**

Symbol	Conditions	Maximum Ratings		
T <sub>VJ</sub>		-55...+150	°C	
T <sub>stg</sub>		-55...+125	°C	
V <sub>ISOL</sub>	I <sub>ISOL</sub> ≤ 1 mA; 50/60 Hz	2500	V~	
F <sub>c</sub>	mounting force	40 ... 130	N	

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
C <sub>P</sub>	coupling capacity between shorted pins and backside metal		90	pF
d <sub>S</sub> , d <sub>A</sub>	pin - pin	1.65		mm
d <sub>S</sub> , d <sub>A</sub>	pin - backside metal	4		mm
CTI		400		
Weight			8	g

Ordering	Ordering Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	IXA30PG1200DHGLB-TRR	IXA30PG1200DHGLB	Tape&Reel	200	511846

Dimensions in mm (1 mm = 0.0394")



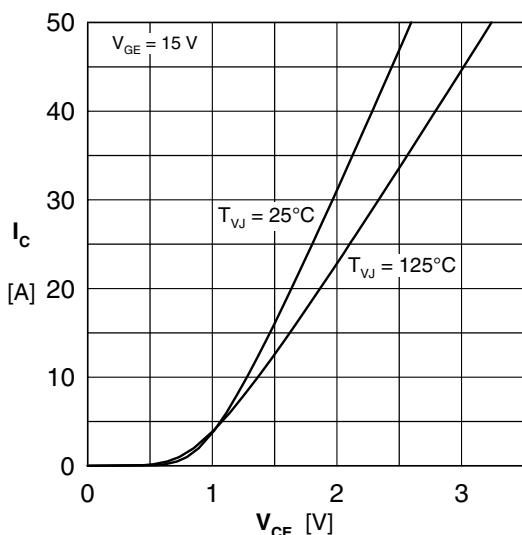


Fig. 1 Typ. output characteristics

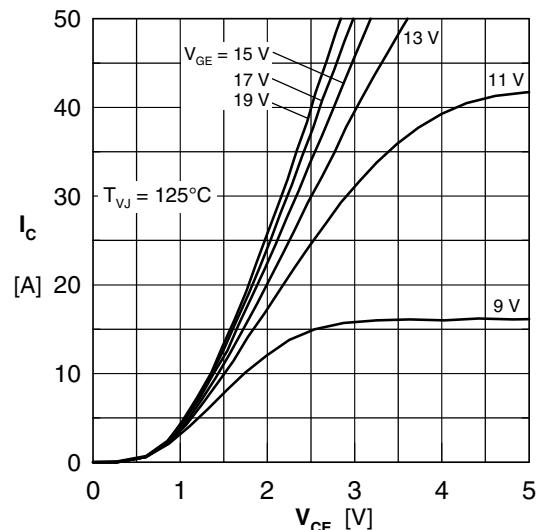


Fig. 2 Typ. output characteristics

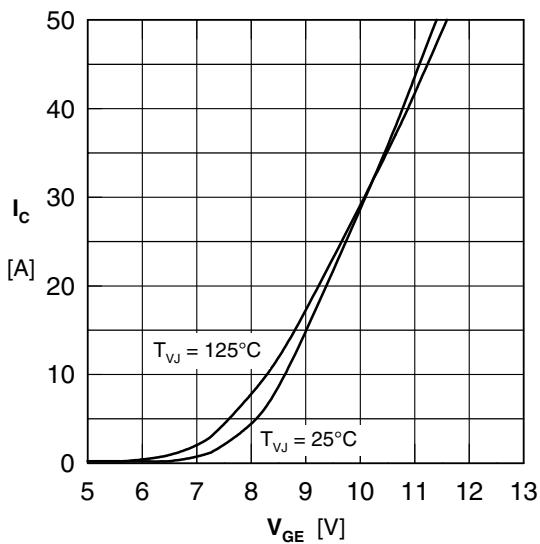


Fig. 3 Typ. tranfer characteristics

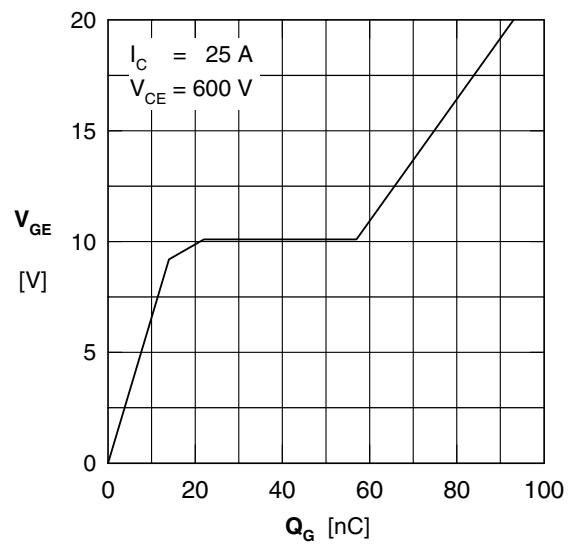


Fig. 4 Typ. turn-on gate charge

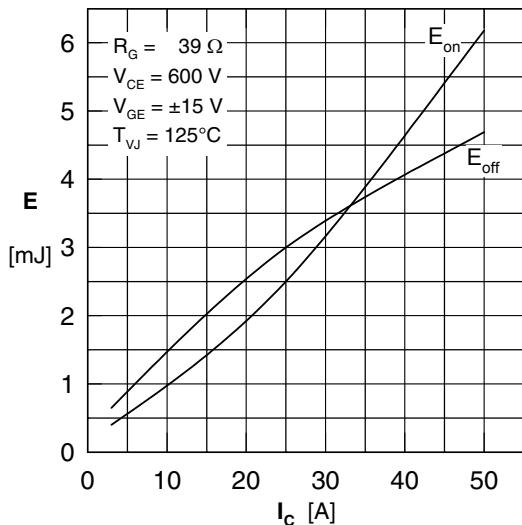


Fig. 5 Typ. switching energy vs. collector current

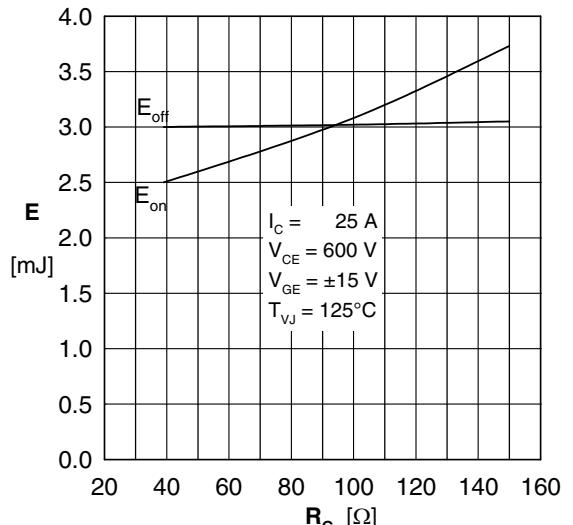
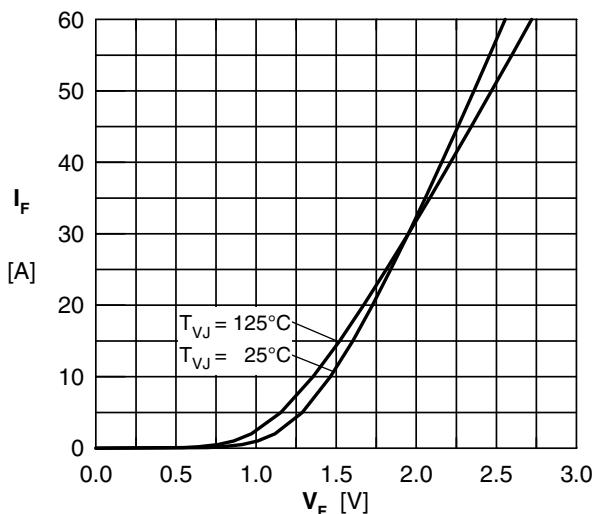
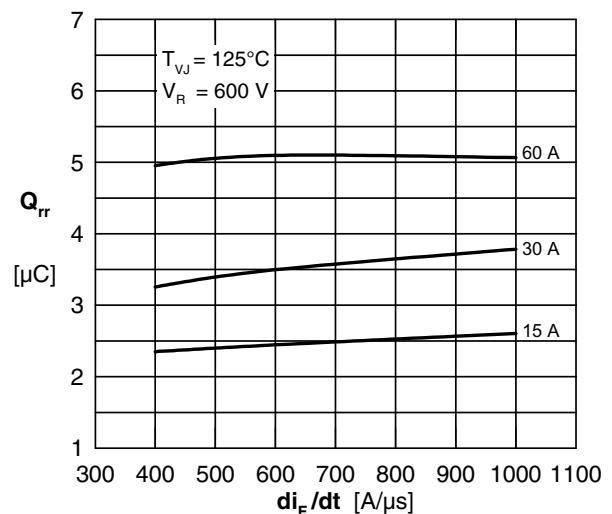
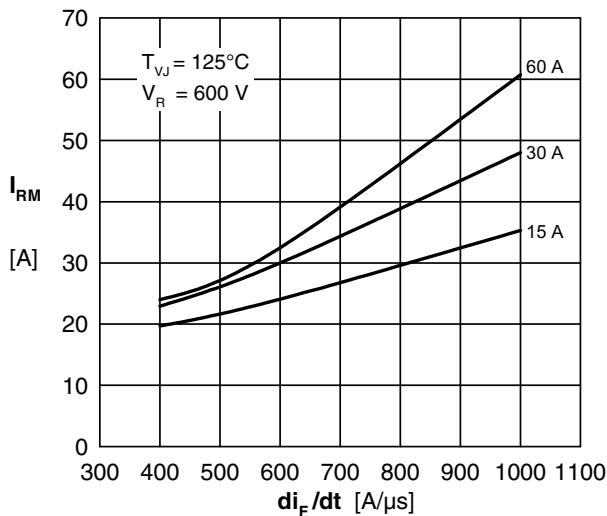
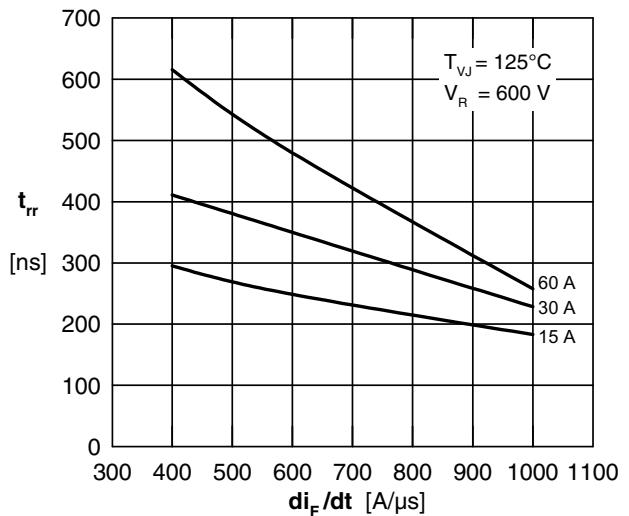
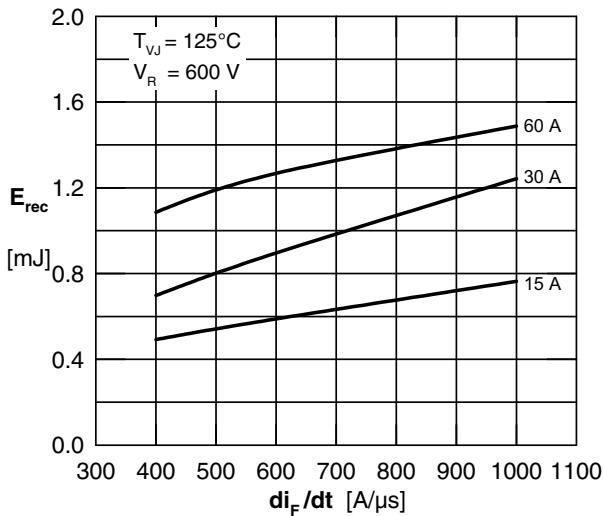


Fig. 6 Typ. switching energy vs. gate resistance

Fig. 7 Typ. Forward current versus  $V_F$ Fig. 8 Typ. reverse recov.charge  $Q_{rr}$  vs.  $di/dt$ Fig. 9 Typ. peak reverse current  $I_{RM}$  vs.  $di/dt$ Fig.10 Typ. recovery time  $t_{rr}$  versus  $di/dt$ Fig.11 Typ. recovery energy  $E_{rec}$  versus  $di/dt$