BUK856-800A

GENERAL DESCRIPTION

Fast-switching N-channel insulated gate bipolar power transistor in a plastic envelope.

The device is intended for use in motor control, DC/DC and AC/DC converters, and in general purpose high frequency switching applications.

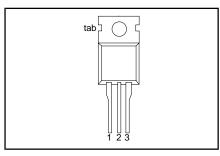
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT	
V _{CE} I _C P _{tot} V _{CEsat}	Collector-emitter voltage Collector current (DC) Total power dissipation Collector-emitter on-state voltage	800 24 125 3.5	V A W V	
E _{off}	Turn-off energy Loss	1.0	mJ	

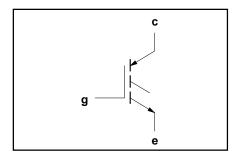
PINNING - TO220AB

PIN	DESCRIPTION	
1	gate	
2	collector	
3	emitter	
tab	collector	

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CE}	Collector-emitter voltage	-	-5	800	V
V_{CGR}	Collector-gate voltage	$R_{GE} = 20 \text{ k}\Omega$	-	800	V
$\pm V_{GE}$	Gate-emitter voltage	-	-	30	V
I _C	Collector current (DC)	$T_{mb} = 25 ^{\circ}C$	-	24	Α
I _C	Collector current (DC)	$T_{mb} = 100 ^{\circ}C$	-	12	Α
I _{CLM}	Collector Current (Clamped	$T_j \leq T_{jmax.}$	-	40	Α
	Inductive Load)	V _{CL} ≤ 500 V			
I _{CM}	Collector current (pulsed peak value,	$T_i \leq T_{imax.}$	-	50	Α
	on-state)	, ,			
P _{tot}	Total power dissipation	$T_{mb} = 25 ^{\circ}C$	-	125	W
T _{stg}	Storage temperature	-	- 55	150	°C
T _j	Junction Temperature	-	-	150	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
R _{th j-mb}	Junction to mounting base	-	-	1.0	K/W
R _{th j-a}	Junction to ambient	In free air	60	-	K/W

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STATIC CHARACTERISTICS

 $T_{mb} = 25$ °C unless otherwise specified

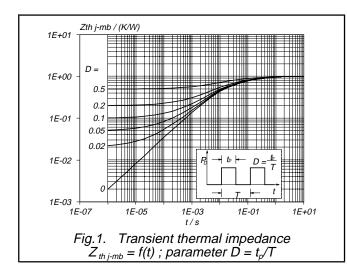
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{(BR)CES}	Collector-emitter breakdown voltage	$V_{GE} = 0 \text{ V}; I_{C} = 0.25 \text{ mA}$	800	-	-	٧
$V_{GE(TO)}$	Gate threshold voltage	$V_{CE} = V_{GE}$; $I_C = 1 \text{ mA}$	3	4	5.5	V
I _{CES}	Zero gate voltage collector current	$V_{CE} = 800 \text{ V}; V_{GE} = 0 \text{ V}; T_j = 25 \text{ °C}$	-	10	200	μΑ
I _{CES}	Zero gate voltage collector current	$V_{CE} = 800 \text{ V}; V_{GE} = 0 \text{ V}; T_j = 125 \text{ °C}$	-	0.2	1	mA
I _{ECS}	Reverse collector current	$V_{CE} = -5 \text{ V}; V_{GE} = 0 \text{ V}$	-	0.1	5	mΑ
I _{GES}	Gate emitter leakage current	$V_{GE} = \pm 30 \text{ V}; V_{CE} = 0 \text{ V}$	-	10	100	nA
V_{CEsat}	Collector-emitter saturation	$V_{GE} = 15 \text{ V}; I_{C} = 12 \text{ A}$	-	2.4	3.5	V
	voltage	$V_{GE} = 15 \text{ V}; I_{C} = 24 \text{ A}$	-	3.1	-	V

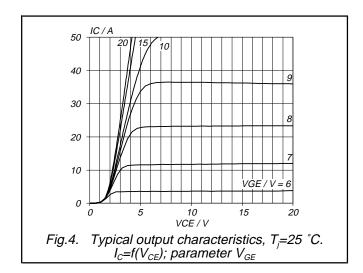
DYNAMIC CHARACTERISTICS

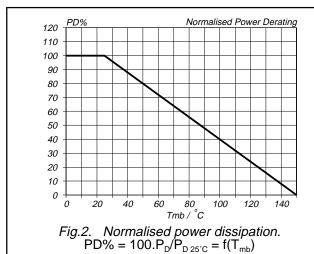
 T_{mb} = 25 °C unless otherwise specified

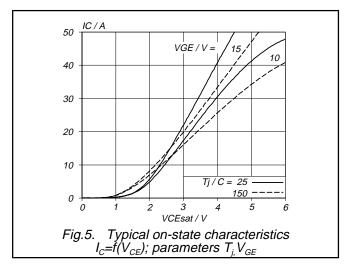
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g _{fe}	Forward transconductance	$V_{CE} = 15 \text{ V}; I_{C} = 6 \text{ A}$	3	7	-	S
$egin{array}{c} C_{\text{ies}} \ C_{\text{oes}} \ C_{\text{res}} \end{array}$	Input capacitance Output capacitance Feedback capacitance	$V_{GE} = 0 \text{ V}; V_{CE} = 25 \text{ V}; f = 1 \text{ MHz}$		900 85 30	1250 120 50	pF pF pF
$\begin{aligned} & t_{d \text{ on}} \\ & t_{r} \\ & E_{on} \\ & t_{d \text{ off}} \\ & t_{f} \\ & E_{off} \end{aligned}$	Turn-on delay time Turn-on rise time Turn-on Energy Loss Turn-off delay time Turn-off fall time Turn-off Energy Loss	$\begin{split} &I_{\text{C}} = 12 \text{ A; } V_{\text{CC}} = 500 \text{ V;} \\ &V_{\text{GE}} = 15 \text{ V; } R_{\text{G}} = 25\Omega; \\ &T_{\text{j}} = 25^{\circ}\text{C;} \\ &\text{Inductive Load} \\ &\text{Energy Losses include all 'tail'} \\ &\text{losses} \end{split}$	-	25 45 0.6 230 200 0.5	- - - 350 400 1	ns ns mJ ns ns mJ
$\begin{array}{c} t_{d \text{ on}} \\ t_r \\ E_{on} \\ t_{d \text{ off}} \\ t_f \\ E_{off} \end{array}$	Turn-on delay time Turn-on rise time Turn-on Energy Loss Turn-off delay time Turn-off fall time Turn-off Energy Loss	$\begin{split} &I_{\text{C}} = 12 \text{ A; } V_{\text{CC}} = 500 \text{ V;} \\ &V_{\text{GE}} = 15 \text{ V; } R_{\text{G}} = 25\Omega; \\ &T_{\text{j}} = 125^{\circ}\text{C;} \\ &\text{Inductive Load} \\ &\text{Energy Losses include all 'tail'} \\ &\text{losses} \end{split}$	- - - -	25 45 0.6 300 400 1	- - - 450 800 2	ns ns mJ ns ns ns

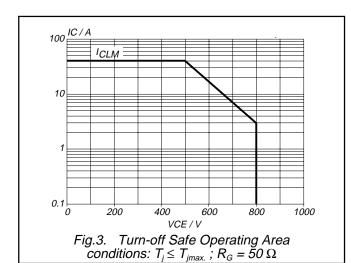
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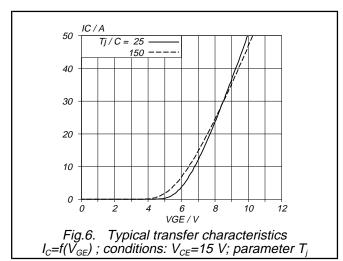




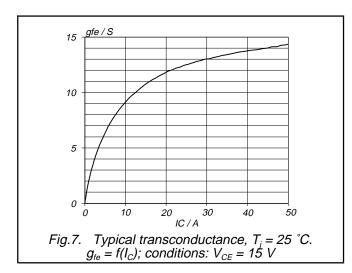


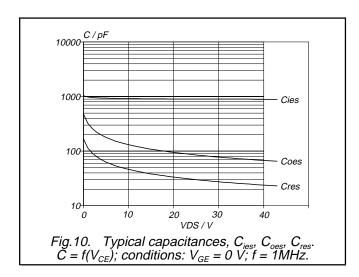


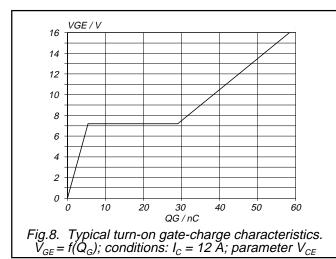


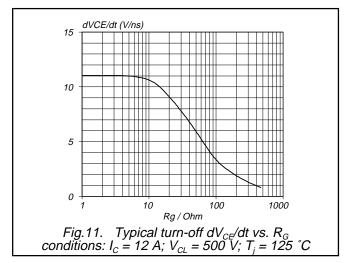


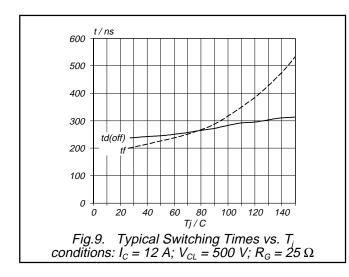
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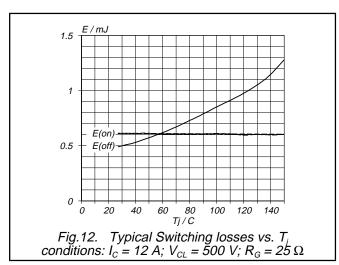




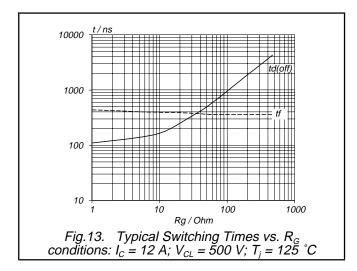


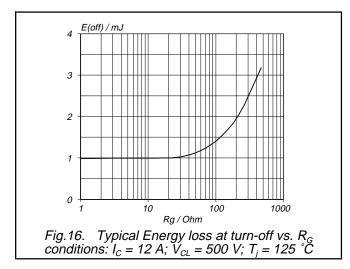


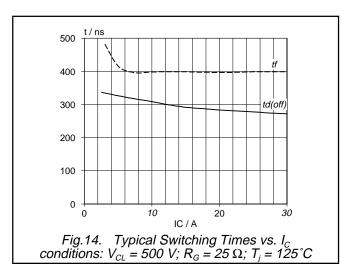


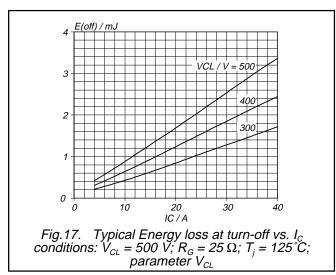


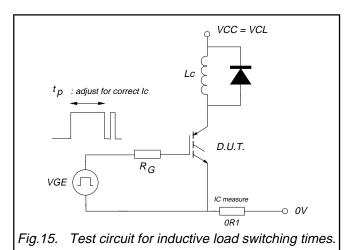
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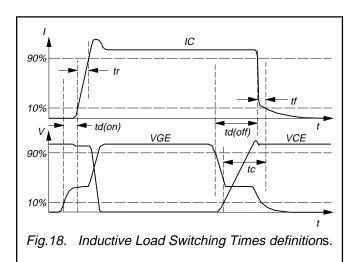






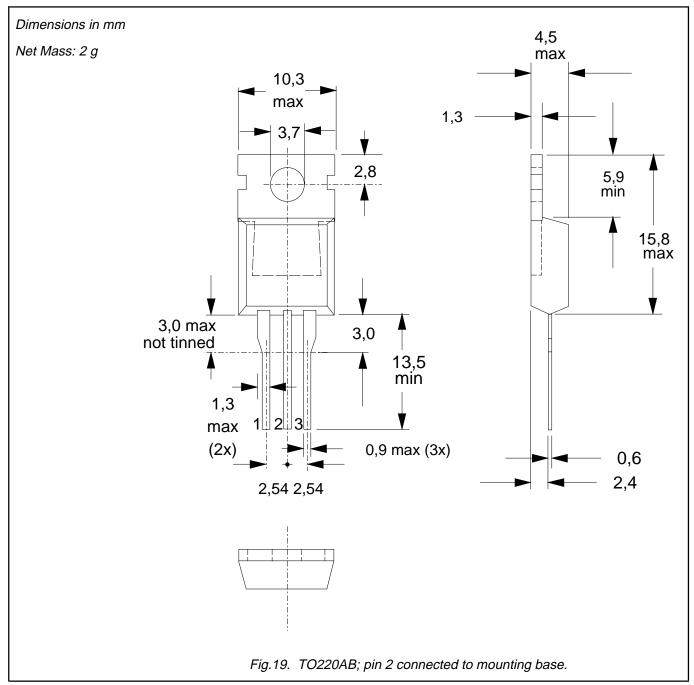






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MECHANICAL DATA



- Observe the general handling precautions for electrostatic-discharge sensitive devices (ESDs) to prevent damage to MOS gate oxide.
 Refer to mounting instructions for TO220 envelopes.
 Epoxy meets UL94 V0 at 1/8".

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DEFINITIONS

Data sheet status				
Objective specification	This data sheet contains target or goal specifications for product development.			
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.			
Product specification	This data sheet contains final product specifications.			

Limiting values

Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information

Where application information is given, it is advisory and does not form part of the specification.

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