

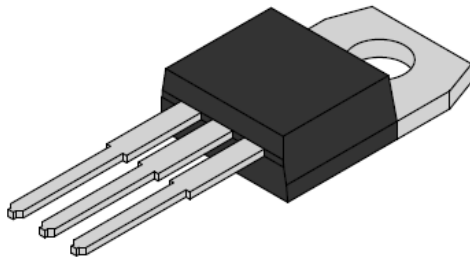
### Features

- ◆ECMOS's Proprietary Trench IGTO Technology
- ◆Integrated SuperBallast™ Technology for Safe, Simple Paralleling
- ◆Extremely Low  $E_{TS}$
- ◆Excellent  $V_{CE,sat}$
- ◆Square Turn-Off SOA >4x Rated Current
- ◆Low turnoff voltage spike

### Applications

- ◆UPS and Solar Inverters
- ◆Welding Equipment
- ◆Power Factor Correction

### Product Summary



Current (A)	Voltage (V)	$V_{CE,sat}$ (V)	Package	Marking
15	600	1.4	TO220	

### Absolute Maximum Ratings

Stresses above those specified under Absolute Maximum Ratings may cause permanent damage to the device and/or affect device reliability. These are stress ratings only; functional operation of the device at these or any other conditions outside those indicated in the Specification Table is not implied.

Absolute maximum ratings apply individually only, not in combination. Unless otherwise specified, all voltages are referenced to GND.

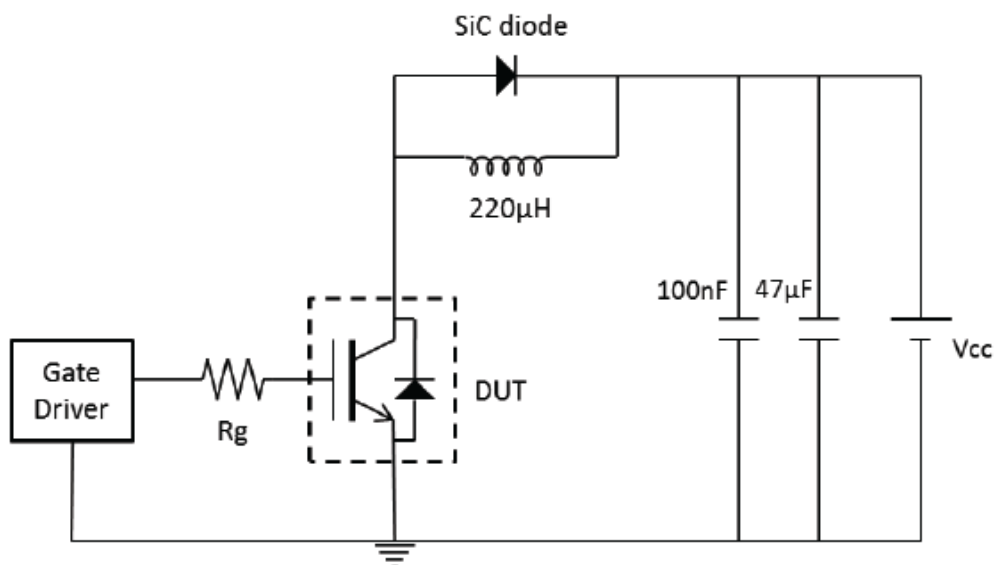
Symbol	Parameter	Min	Typ	Max	Unit
$V_{CE}$	Collector-to-Emitter Voltage			600	V
$I_{CE}$	DC Collector Current				
	TC = 25°C			30	A
	TC = 100°C			15	A
$V_{GE}$	Gate-to-Emitter Voltage	-20		20	V
$T_J$	Operating Junction Temperature	-40		150	°C
$T_{STG}$	Storage Temperature	-55		150	°C

### Electrical Specifications

Typical values are at  $T_J=25^{\circ}\text{C}$ , unless otherwise specified. All limits at temperature extremes are guaranteed via correlation using standard statistical quality control (SQC).

Symbol	Parameter	Min	Typ	Max	Unit
$V_{BR,CES}$	Collector-to-Emitter Breakdown Voltage				
	$V_{GE}=0\text{V}, I_C=250\mu\text{A}$	600.0			V
$V_{CE,SAT}$	Collector-to-Emitter Saturation Voltage				
	$I_C=10\text{A}, V_{GE}=15\text{V}$		1.67		V
	$I_C=10\text{A}, V_{GE}=15\text{V}, T_J=150^{\circ}\text{C}$		1.4		V
	$I_C=20\text{A}, V_{GE}=15\text{V}$		2.1		V
$V_{GE}$	Gate Threshold Voltage				
	$V_{CE}=V_{GE}, I_C=250\mu\text{A}$		3.8	5.4	V
$I_{CES}$	Collector Leakage Current				
	$V_{GE}=0\text{V}, V_{CE}=600\text{V}$		0.1	10.0	$\mu\text{A}$
	$V_{GE}=0\text{V}, V_{CE}=600\text{V}, T_J=150^{\circ}\text{C}$		1000.0		$\mu\text{A}$
$I_{CES}$	Gate Leakage Current				
	$V_{GE}=20\text{V}, V_{CE}=0\text{V}$			100.0	nA
$C_{IES}$	Gate Emitter Capacitance				
	$V_{GE}=0\text{V}, V_{CE}=25\text{V}, f=1\text{MHz}$		1750.0		pF
$C_{OES}$	Output Capacitance				
	$V_{GE}=0\text{V}, V_{CE}=25\text{V}, f=1\text{MHz}$		12.0		pF
$C_{RES}$	Reverse Transfer Capacitance				
	$V_{GE}=0\text{V}, V_{CE}=25\text{V}, f=1\text{MHz}$		9.0		pF

### Inductive Load Test Circuit



**Switching Characteristics** $I_C=10A, V_{CC}=400V, V_{GE}=15V, V_{CC}=400V, R_G=6\Omega$ , Energy includes tail.

Symbol	Parameter	Min	Typ	Max	Unit
$t_{d,ON}$	Turn-on Delay Time		44.0		ns
$t_r$	Turn-on Rise Time		51.0		ns
$t_{d,OFF}$	Turn-off Delay Time		135.0		ns
$t_f$	Turn-off Fall Time		75.0		ns
$E_{ON}$	Turn-on Switching Loss		0.17		mJ
$E_{OFF}$	Turn-off Switching Loss		0.16		mJ
$E_{TS}$	Total Switching Loss		0.33		mJ

 $T_J=100^\circ C, I_C=10A, V_{CC}=400V, V_{GE}=15V, V_{CC}=400V, R_G=6\Omega$ , Energy includes tail.

Symbol	Parameter	Min	Typ	Max	Unit
$t_{d,ON}$	Turn-on Delay Time		48.0		ns
$t_r$	Turn-on Rise Time		50.0		ns
$t_{d,OFF}$	Turn-off Delay Time		167.0		ns
$t_f$	Turn-off Fall Time		61.0		ns
$E_{ON}$	Turn-on Switching Loss		0.16		mJ
$E_{OFF}$	Turn-off Switching Loss		0.19		mJ
$E_{TS}$	Total Switching Loss		0.35		mJ

 $T_J=150^\circ C, I_C=10A, V_{CC}=400V, V_{GE}=15V, V_{CC}=400V, R_G=6\Omega$ , Energy includes tail.

Symbol	Parameter	Min	Typ	Max	Unit
$t_{d,ON}$	Turn-on Delay Time		50.0		ns
$t_r$	Turn-on Rise Time		51.0		ns
$t_{d,OFF}$	Turn-off Delay Time		210.0		ns
$t_f$	Turn-off Fall Time		84.0		ns
$E_{ON}$	Turn-on Switching Loss		0.17		mJ
$E_{OFF}$	Turn-off Switching Loss		0.27		mJ
$E_{TS}$	Total Switching Loss		0.44		mJ

 $T_J=100^\circ C, I_C=10A, V_{CC}=400V, V_{GE}=15V/-8V, V_{CC}=400V, R_G=6\Omega$ , Energy includes tail.

Symbol	Parameter	Min	Typ	Max	Unit
$t_{d,ON}$	Turn-on Delay Time		46.0		ns
$t_r$	Turn-on Rise Time		50.0		ns
$t_{d,OFF}$	Turn-off Delay Time		114.0		ns
$t_f$	Turn-off Fall Time		24.0		ns
$E_{ON}$	Turn-on Switching Loss		0.16		mJ
$E_{OFF}$	Turn-off Switching Loss		0.14		mJ
$E_{TS}$	Total Switching Loss		0.3		mJ

### Pin Configuration

Pin Number	Description
1	Gate
2	Collector
3	Emitter

### Package Drawing

