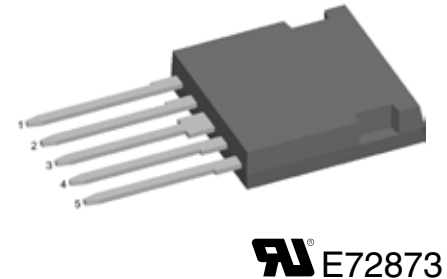
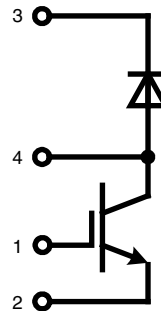


IGBT Boost Chopper

in ISOPLUS i4-PAC™

 $I_{C25} = 65 \text{ A}$
 $V_{CES} = 600 \text{ V}$
 $V_{CE(sat) \text{ typ.}} = 1.6 \text{ V}$


E72873

IGBT						
Symbol	Conditions	Maximum Ratings				
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V			
V_{GES}		± 20	V			
I_{C25}	$T_C = 25^{\circ}\text{C}$	65	A			
I_{C90}	$T_C = 90^{\circ}\text{C}$	40	A			
I_{CM}	$V_{GE} = \pm 15 \text{ V}; R_G = 22 \Omega; T_{VJ} = 125^{\circ}\text{C}$	100	A			
V_{CEK}	RBSOA Clamped inductive load; $L = 100 \mu\text{H}$	V_{CES}				
t_{SC} (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 22 \Omega$ $T_{VJ} = 125^{\circ}\text{C}; \text{non-repetitive}$	10	μs			
P_{tot}	$T_C = 25^{\circ}\text{C}$	200	W			
Symbol	Conditions	Characteristic Values				
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)						
		min.	typ.	max.		
$V_{CE(sat)}$	$I_C = 30 \text{ A}; V_{GE} = 15 \text{ V}$		1.6	2.0	V	
			1.8		V	
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{GE}$	4.5		6.5	V	
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}$		0.1	0.1	mA	
					mA	
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			200	nA	
$t_{d(on)}$	Inductive load $V_{CE} = 300 \text{ V}; I_C = 30 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 22 \Omega$ $T_{VJ} = 125^{\circ}\text{C}$		50		ns	
t_r			60		ns	
$t_{d(off)}$			300		ns	
t_f			30		ns	
E_{on}				1.0		mJ
E_{off}				1.4		mJ
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		2.8		nF	
Q_{Gon}	$V_{CE} = 300 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 50 \text{ A}$		120		nC	
R_{thJC}				0.6	K/W	
R_{thJH}	with heatsink compound		1.2		K/W	

Features

- NPT IGBT technology
 - low saturation voltage with positive temperature coefficient
 - fast switching
 - wide safe operating area
- HiPerFRED™ diode
 - fast reverse recovery
 - low operating forward voltage
 - low leakage current
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - low coupling capacity between pins and heatsink
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability
 - industry standard outline
 - UL registered E 72873

Applications

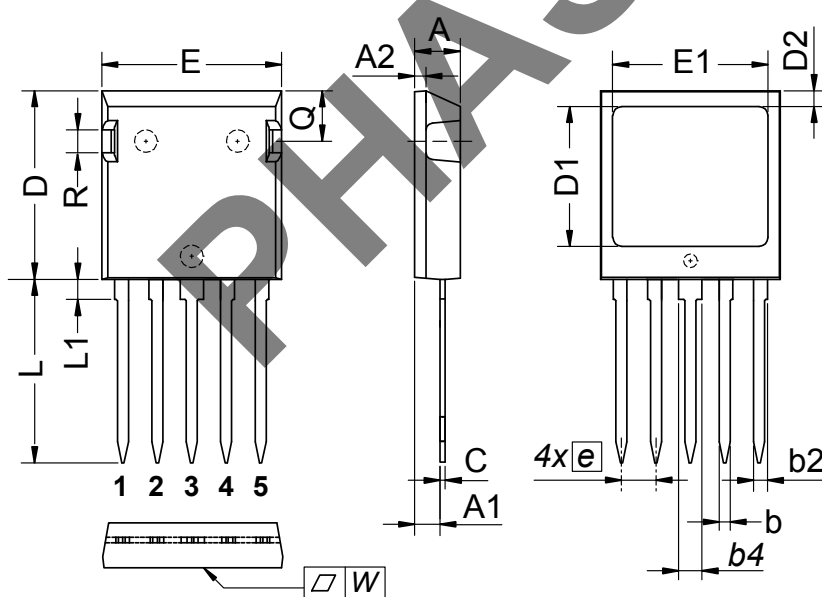
- medium frequency power supplies
 - boost chopper for power factor correction
 - transformer primary switch
- drives: supply of
 - switched reluctance machines
 - armature or excitation winding of DC machines
 - excitation winding of synchronous machines

Diode			
Symbol	Conditions	Maximum Ratings	
V_{RRM}	$T_{VJ} = 25^{\circ}\text{C}$ to 150°C	600	V
I_{F25}	$T_C = 25^{\circ}\text{C}$	52	A
I_{F90}	$T_C = 90^{\circ}\text{C}$	31	A

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$	2.2	2.6	V
		$T_{VJ} = 125^{\circ}\text{C}$	1.5		V
I_R	$V_R = V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C}$	0.3	0.3	mA
		$T_{VJ} = 125^{\circ}\text{C}$			mA
I_{RM}	$I_F = 30\text{ A}; di_F/dt = -500\text{ A}/\mu\text{s};$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V};$	$T_{VJ} = 125^{\circ}\text{C}$	15		A
t_{rr}			70		ns
R_{thJC}	with heatsink compound		1.3		K/W
R_{thJH}		2.6		K/W	

Component			
Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-55...+150	$^{\circ}\text{C}$
T_{stg}		-55...+125	$^{\circ}\text{C}$
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}; t = 1\text{ s}$	2500	V~
F_C	Mounting force with clip	20...120	Nm

Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
C_P	coupling capacity between shorted pins and mounting tab in the case		40		pF
d_S, d_A	pin - pin	1.7			mm
d_S, d_A	pin - backside metal	5.5			mm
Weight			6		g



DIM.	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4	2.54	2.79	0.100	0.110
C	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	3.81 BSC		0.15 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	—	0.10	—	0.004

Die konvexe Form des Substrates ist typ. < 0.05 mm über der Kunststoffoberfläche der Bauteilunterseite
The convex bow of substrate is typ. < 0.05 mm over plastic surface level of device bottom side

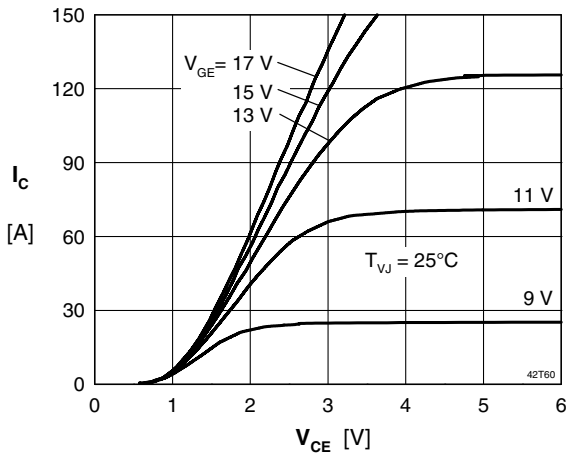


Fig. 1 Typ. output characteristics

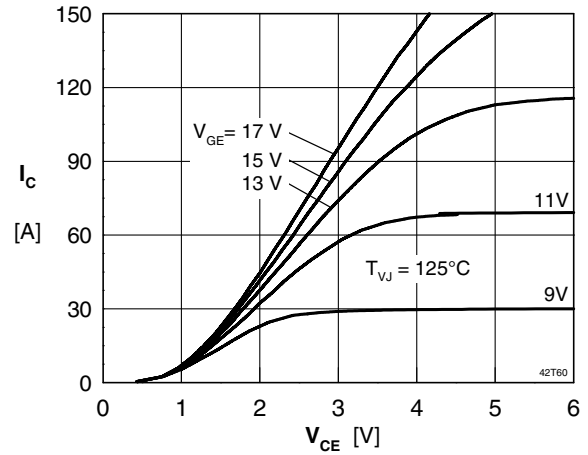


Fig. 2 Typ. output characteristics

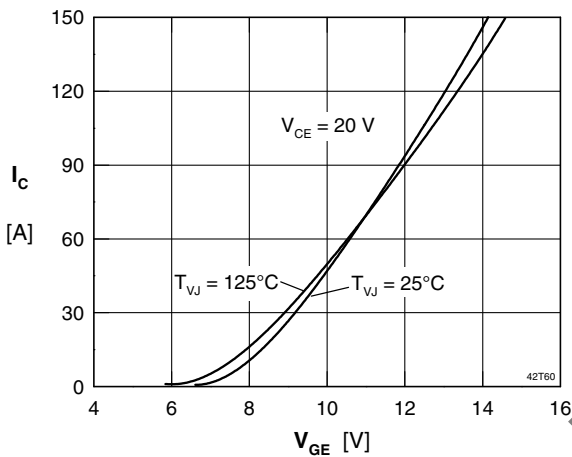


Fig. 3 Typ. transfer characteristics

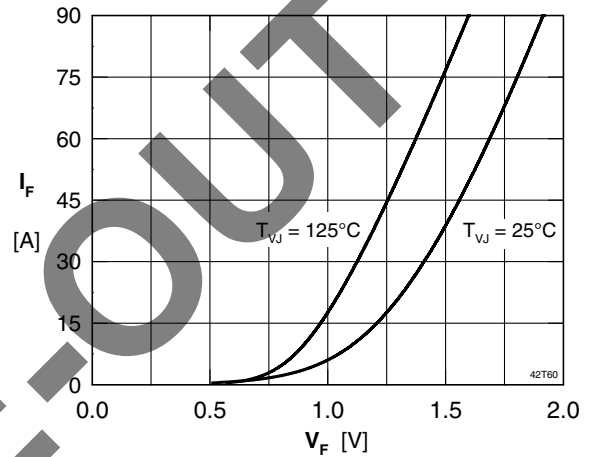


Fig. 4 Typ. forward characteristics of free wheeling diode

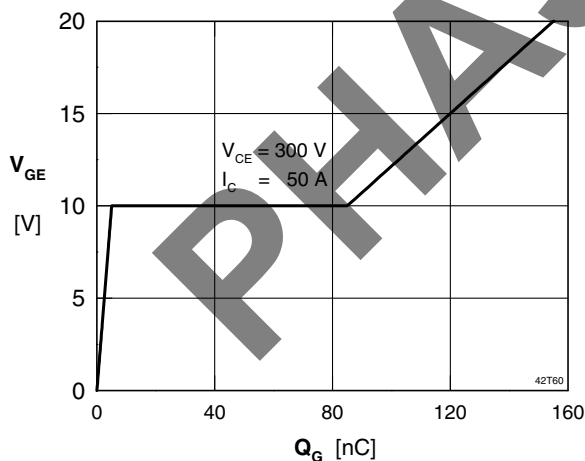


Fig. 5 Typ. turn on gate charge

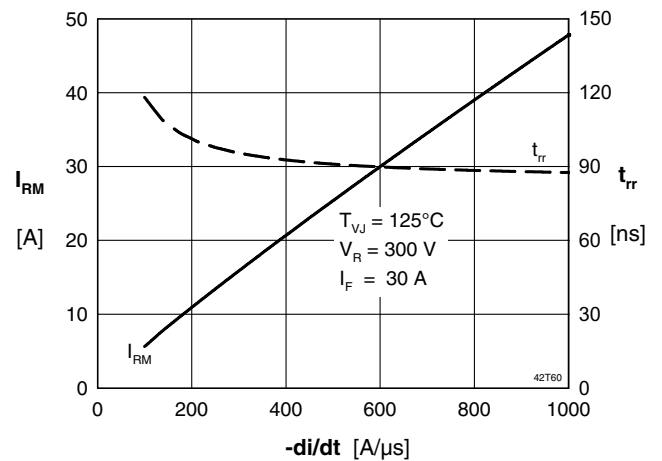


Fig. 6 Typ. turn off characteristics of free wheeling diode