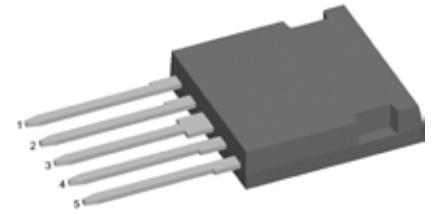
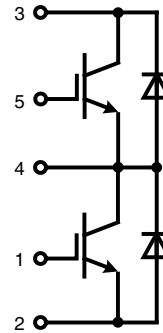


IGBT phaseleg

in ISOPLUS i4-PAC™

$$\begin{aligned} I_{C25} &= 40 \text{ A} \\ V_{CES} &= 600 \text{ V} \\ V_{CE(sat) \text{ typ.}} &= 1.8 \text{ V} \end{aligned}$$



E72873

IGBT						
Symbol	Conditions	Maximum Ratings				
V_{CES}	$T_{VJ} = 25^{\circ}\text{C}$ to 150°C	600	V			
V_{GES}		± 20	V			
I_{C25}	$T_C = 25^{\circ}\text{C}$	40	A			
I_{C90}	$T_C = 90^{\circ}\text{C}$	25	A			
I_{CM}	$V_{GE} = \pm 15\text{ V}$; $R_G = 33\ \Omega$; $T_{VJ} = 125^{\circ}\text{C}$	60	A			
V_{CEK}	RBSOA Clamped inductive load; $L = 100\ \mu\text{H}$	V_{CES}				
t_{SC} (SCSOA)	$V_{CE} = V_{CES}$; $V_{GE} = \pm 15\text{ V}$; $R_G = 33\ \Omega$ $T_{VJ} = 125^{\circ}\text{C}$; non-repetitive	10	μs			
P_{tot}	$T_C = 25^{\circ}\text{C}$	125	W			

Symbol	Conditions	Characteristic Values					
$(T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)							
		min.	typ.	max.			
$V_{CE(sat)}$	$I_C = 25\text{ A}$; $V_{GE} = 15\text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1.8 2.0	2.2	V V		
$V_{GE(th)}$	$I_C = 0.7\text{ mA}$; $V_{GE} = V_{CE}$	4.5		6.5	V		
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0\text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.6	0.6	mA mA		
I_{GES}	$V_{CE} = 0\text{ V}$; $V_{GE} = \pm 20\text{ V}$			200	nA		
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load $V_{CE} = 300\text{ V}$; $I_C = 25\text{ A}$ $V_{GE} = \pm 15\text{ V}$; $R_G = 33\ \Omega$ $T_{VJ} = 125^{\circ}\text{C}$		50 50 270 40 1.2 0.8		ns ns ns ns mJ mJ		
C_{ies}		$V_{CE} = 25\text{ V}$; $V_{GE} = 0\text{ V}$; $f = 1\text{ MHz}$		1.6		nF	
Q_{Gon}		$V_{CE} = 300\text{ V}$; $V_{GE} = 15\text{ V}$; $I_C = 30\text{ A}$		95		nC	
R_{thJC} R_{thJH}		with heatsink compound		2	1	K/W K/W	

Features

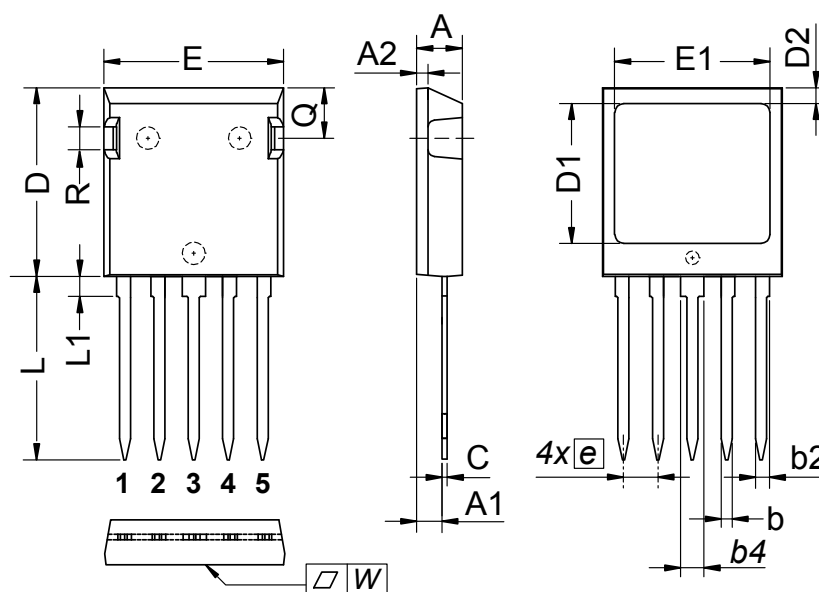
- NPT IGBT technology
 - low saturation voltage
 - positive temperature coefficient for easy paralleling
 - fast switching
- HiPerFRED™ diode
 - optimized fast and soft reverse recovery
 - low operating forward voltage
 - low leakage current
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - low coupling 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

- single phaseleg
 - buck-boost chopper
- H bridge
 - power supplies
 - induction heating
 - four quadrant DC drives
 - controlled rectifier
- three phase bridge
 - AC drives
 - controlled rectifier

Diode					
Symbol	Conditions	Maximum Ratings			
V_{RRM}	$T_{VJ} = 25^{\circ}\text{C}$ to 150°C	600			V
I_{F25}	$T_C = 25^{\circ}\text{C}$	30			A
I_{F90}	$T_C = 90^{\circ}\text{C}$	15			A
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	$I_F = 25\text{ A}$		2.5	2.8	V
	$T_{VJ} = 125^{\circ}\text{C}$		1.7		V
I_{RM}	$I_F = 15\text{ A}; di_F/dt = -400\text{ A}/\mu\text{s};$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V};$		7		A
t_{rr}			50		ns
R_{thJC}	(per diode)			2.3	K/W
R_{thJH}	with heatsink compound		4.6		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

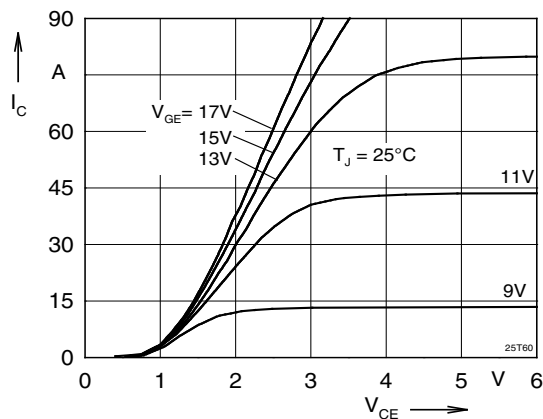


Fig. 1 Typ. output characteristics

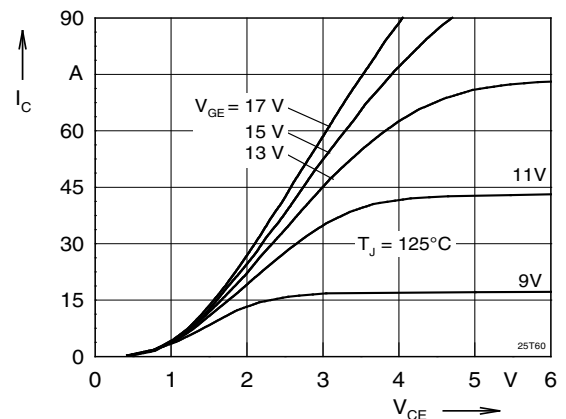


Fig. 2 Typ. output characteristics

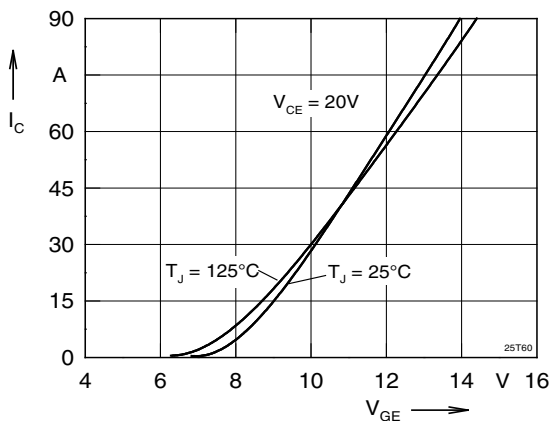


Fig. 3 Typ. transfer characteristics

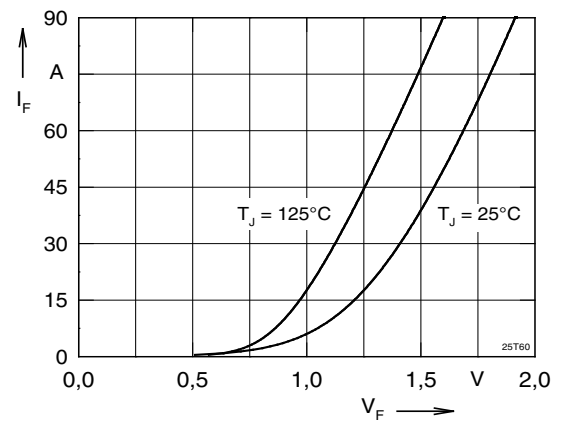


Fig. 4 Typ. forward characteristics of free wheeling diode

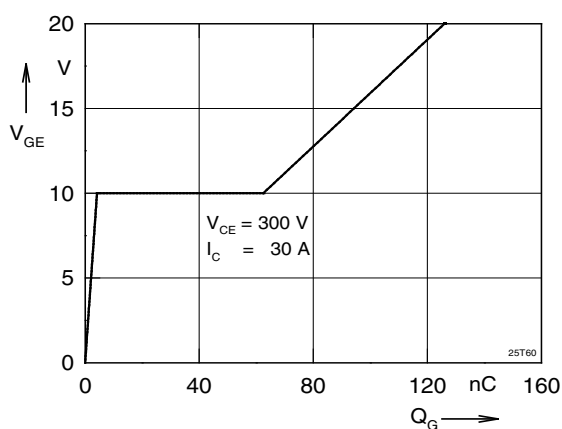


Fig. 5 Typ. turn on gate charge

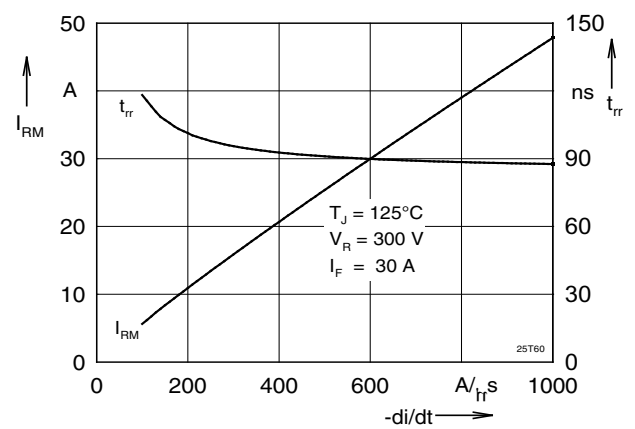


Fig. 6 Typ. turn off characteristics of free wheeling diode

