

**SEMITOP® 3 Press-Fit**

## Sixpack Open Emitter

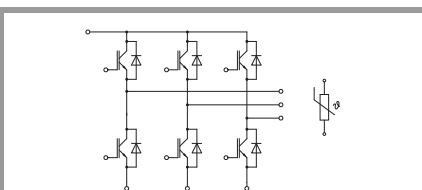
### SK30GD066ETp

#### Features\*

- One screw mounting module
- Low inductive design
- Press-Fit contact technology
- Fully compatible with other SEMITOP® Press-Fit types
- 600V Trench IGBT3 technology
- Robust and soft switching CAL HD diode technology
- Integrated NTC temperature sensor
- UL recognized, file no. E 63 532

#### Typical Applications

- Motor drives
- Servo drives
- Air conditioning
- Auxiliary Inverters
- UPS

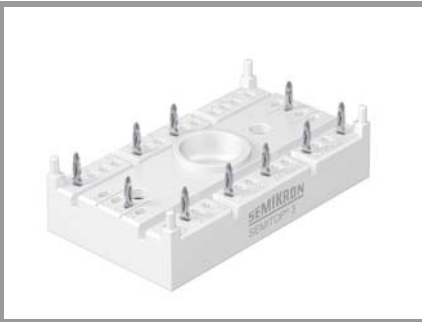


**GD-ET**

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
<b>IGBT 1</b>			
$V_{CES}$	$T_j = 25\text{ °C}$	600	V
$I_C$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	33
		$T_s = 70\text{ °C}$	25
$I_C$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	40
		$T_s = 70\text{ °C}$	31
$I_{Chom}$		30	A
$I_{CRM}$		60	A
$V_{GES}$		-20 ... 20	V
$t_{psc}$	$V_{CC} = 360\text{ V}$ $V_{GE} \leq 15\text{ V}$ $V_{CES} \leq 600\text{ V}$	$T_j = 150\text{ °C}$	6
$T_j$		-40 ... 175	°C

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
<b>Diode 1</b>			
$V_{RRM}$	$T_j = 25\text{ °C}$	600	V
$I_F$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	32
		$T_s = 70\text{ °C}$	24
$I_F$	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	36
		$T_s = 70\text{ °C}$	28
$I_{FRM}$		60	A
$I_{FSM}$	10 ms, sin 180°, $T_j = 150\text{ °C}$	160	A
$T_j$		-40 ... 175	°C

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
<b>Module</b>			
$I_{t(RMS)}$	$\Delta T_{terminal}$ at PCB joint = 30 K, per pin	35	A
$T_{stg}$		-40 ... 125	°C
$V_{isol}$	AC, sinusoidal, t = 1 min	2500	V



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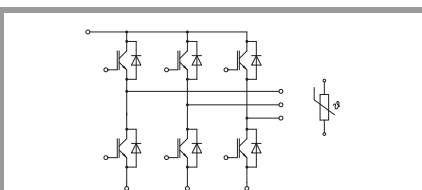
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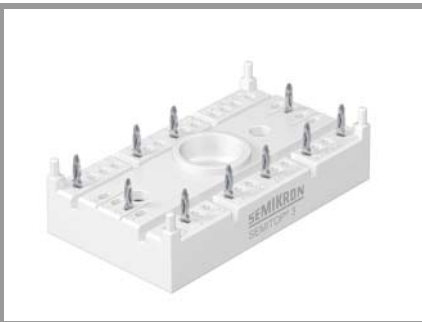


**GD-ET**

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
<b>IGBT 1</b>						
$V_{CE(sat)}$	$I_C = 30\text{ A}$ $V_{GE} = 15\text{ V}$ chipllevel	$T_j = 25\text{ °C}$	1.45	1.85		V
		$T_j = 150\text{ °C}$	1.65	2.05		V
$V_{CE0}$	chipllevel	$T_j = 25\text{ °C}$	0.90	1.10		V
		$T_j = 150\text{ °C}$	0.80	1.00		V
$r_{CE}$	$V_{GE} = 15\text{ V}$ chipllevel	$T_j = 25\text{ °C}$	18	25		mΩ
		$T_j = 150\text{ °C}$	28	35		mΩ
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0.43\text{ mA}$		5	5.8	6.5	V
$I_{CES}$	$V_{GE} = 0\text{ V}$ $V_{CE} = 600\text{ V}$	$T_j = 25\text{ °C}$			0.01	mA
					-	mA
$C_{ies}$	$V_{CE} = 25\text{ V}$ $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$		1.63		nF
$C_{oes}$		$f = 1\text{ MHz}$		0.108		nF
$C_{res}$		$f = 1\text{ MHz}$		0.05		nF
$Q_G$	$V_{GE} = -7\text{ V} \dots +15\text{ V}$			275		nC
$R_{Gint}$	$T_j = 25\text{ °C}$			0		Ω
$t_{d(on)}$	$V_{CC} = 300\text{ V}$	$T_j = 150\text{ °C}$		24		ns
$t_r$	$I_C = 30\text{ A}$	$T_j = 150\text{ °C}$		27		ns
$E_{on}$	$V_{GE\ neg} = -7\text{ V}$ $V_{GE\ pos} = 15\text{ V}$	$T_j = 150\text{ °C}$		0.97		mJ
$t_{d(off)}$	$R_{G\ on} = 25\text{ Ω}$	$T_j = 150\text{ °C}$		328		ns
$t_f$	$R_{G\ off} = 25\text{ Ω}$	$T_j = 150\text{ °C}$		54		ns
$E_{off}$	$di/dt_{on} = 2335\text{ A/μs}$ $di/dt_{off} = 2335\text{ A/μs}$	$T_j = 150\text{ °C}$		1.77		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste}=0.8\text{ W/(mK)}$			1.65		K/W

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
<b>Diode 1</b>						
$V_F$	$I_F = 30\text{ A}$ chipllevel	$T_j = 25\text{ °C}$	1.45	1.99		V
		$T_j = 150\text{ °C}$	1.61	1.92		V
$V_{F0}$	chipllevel	$T_j = 25\text{ °C}$	0.99	1.10		V
		$T_j = 150\text{ °C}$	0.80	0.89		V
$r_F$	chipllevel	$T_j = 25\text{ °C}$	18	30		mΩ
		$T_j = 150\text{ °C}$	27	34		mΩ
$I_{RRM}$	$I_F = 30\text{ A}$	$T_j = 150\text{ °C}$		30		A
$Q_{rr}$	$di/dt_{off} = 2335\text{ A/μs}$ $V_{GE} = -7\text{ V}$	$T_j = 150\text{ °C}$		1.6		μC
$E_{rr}$	$V_{CC} = 300\text{ V}$	$T_j = 150\text{ °C}$		0.26		mJ
$R_{th(j-s)}$	per Diode			2.1		K/W

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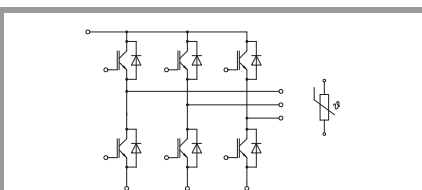
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
<b>Module</b>					
$M_s$	to heatsink	2.25		2.5	Nm
w	weight		30		g

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
<b>Temperature Sensor</b>					
$R_{100}$	$T_r = 100\text{ °C}$		$493 \pm 5\%$		$\Omega$
$B_{100/125}$	$R_{(T)} = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$ ; T[K];		$3550 \pm 2\%$		K

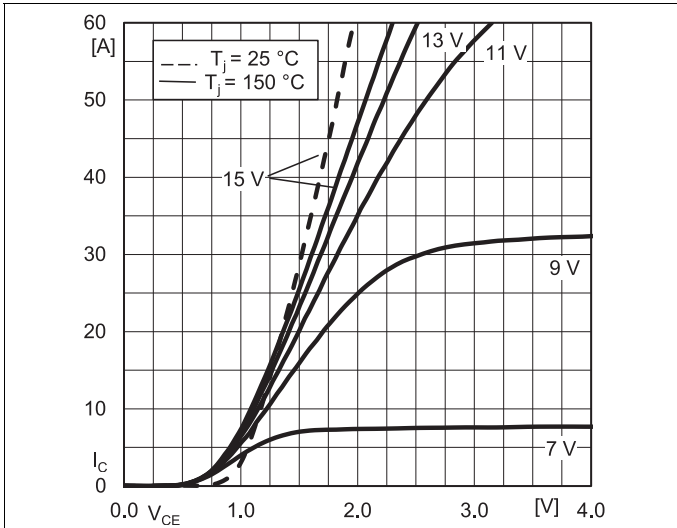


Fig. 1: Typ. IGBT output characteristic, incl.  $R_{CC+EE}$

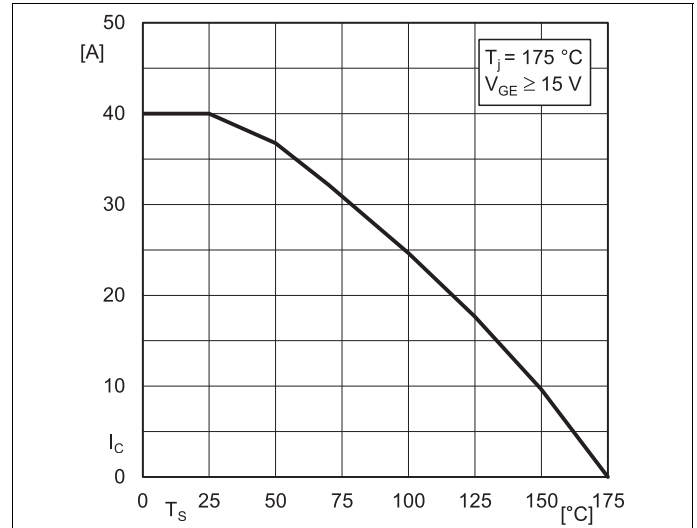


Fig. 2: IGBT rated current vs. temperature  $I_C=f(T_s)$

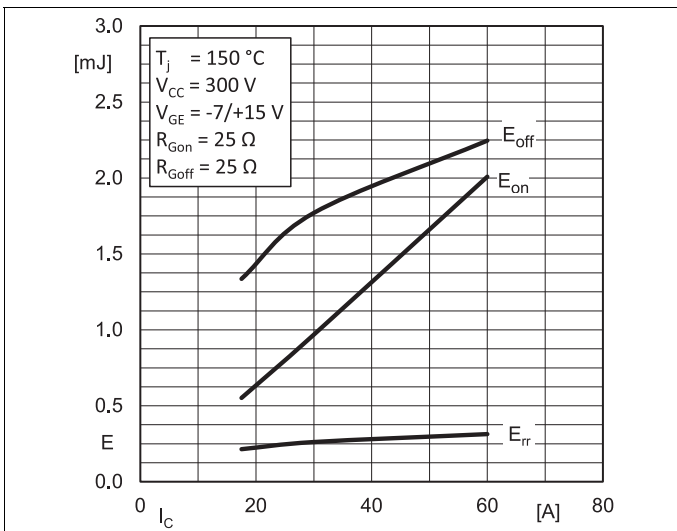


Fig. 3: Typ. turn-on /-off energy =  $f(I_C)$

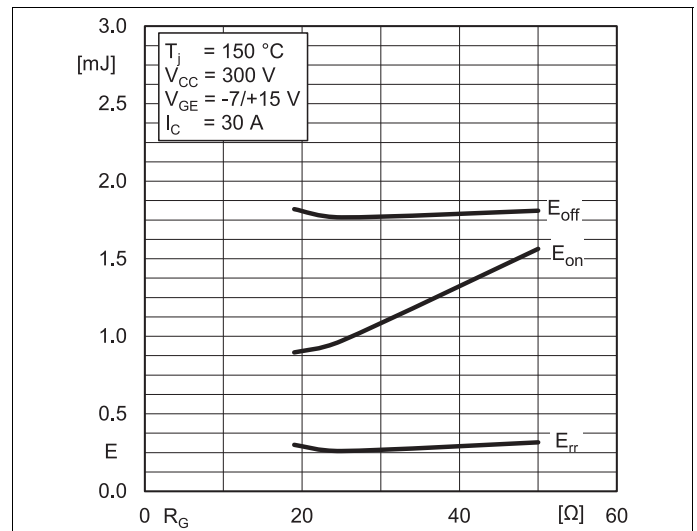


Fig. 4: Typ. turn-on /-off energy =  $f(R_G)$

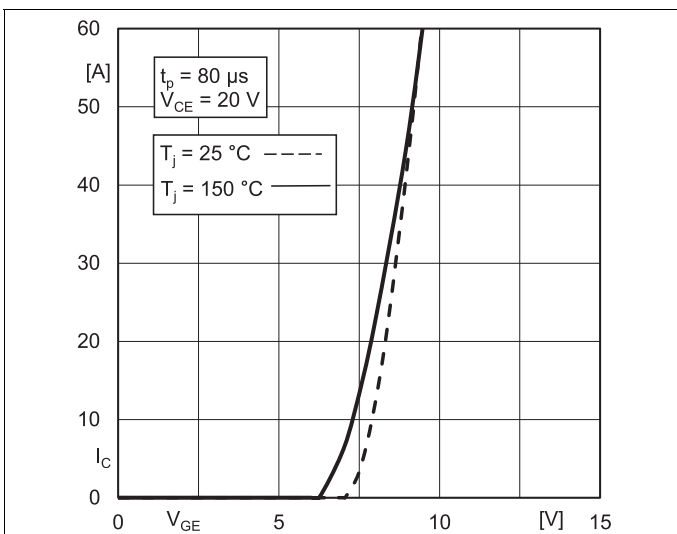


Fig. 5: Typ. IGBT transfer characteristic

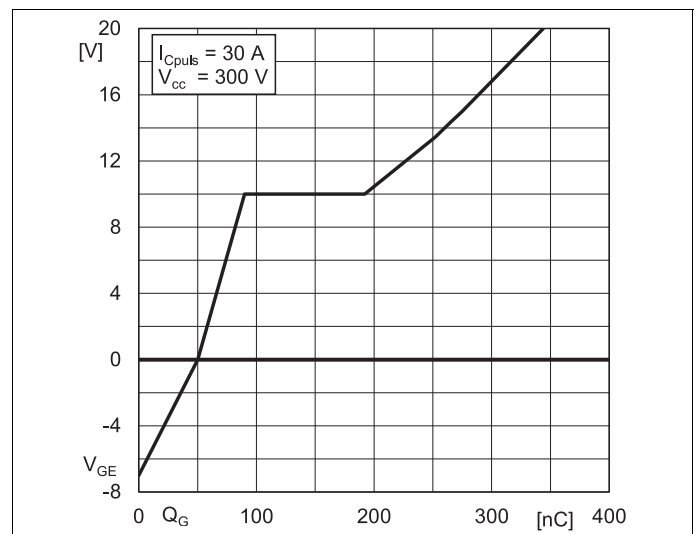


Fig. 6: Typ. IGBT gate charge characteristic

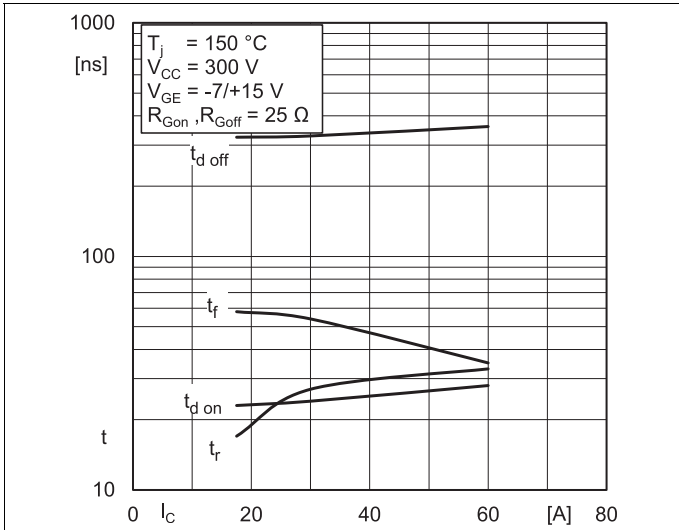


Fig. 7: Typ. switching times =  $f(I_C)$

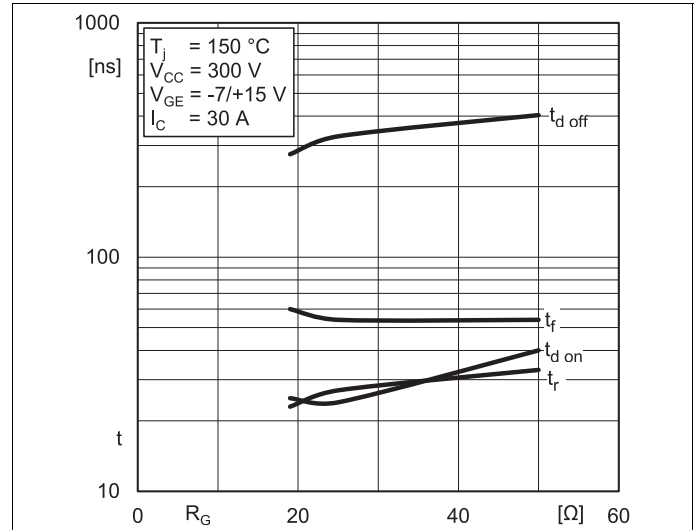


Fig. 8: Typ. switching times =  $f(R_G)$

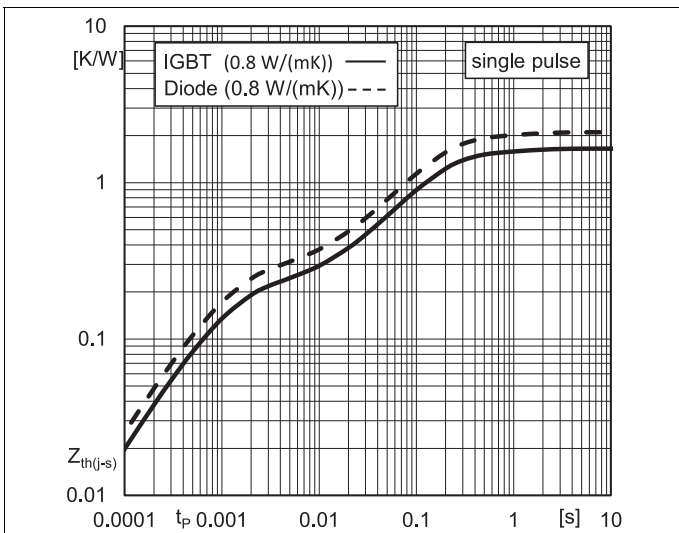


Fig. 9: Typ. transient thermal impedance

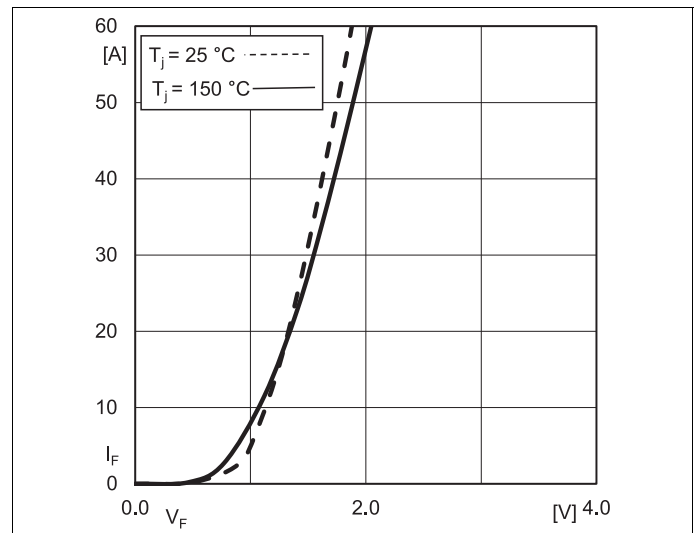
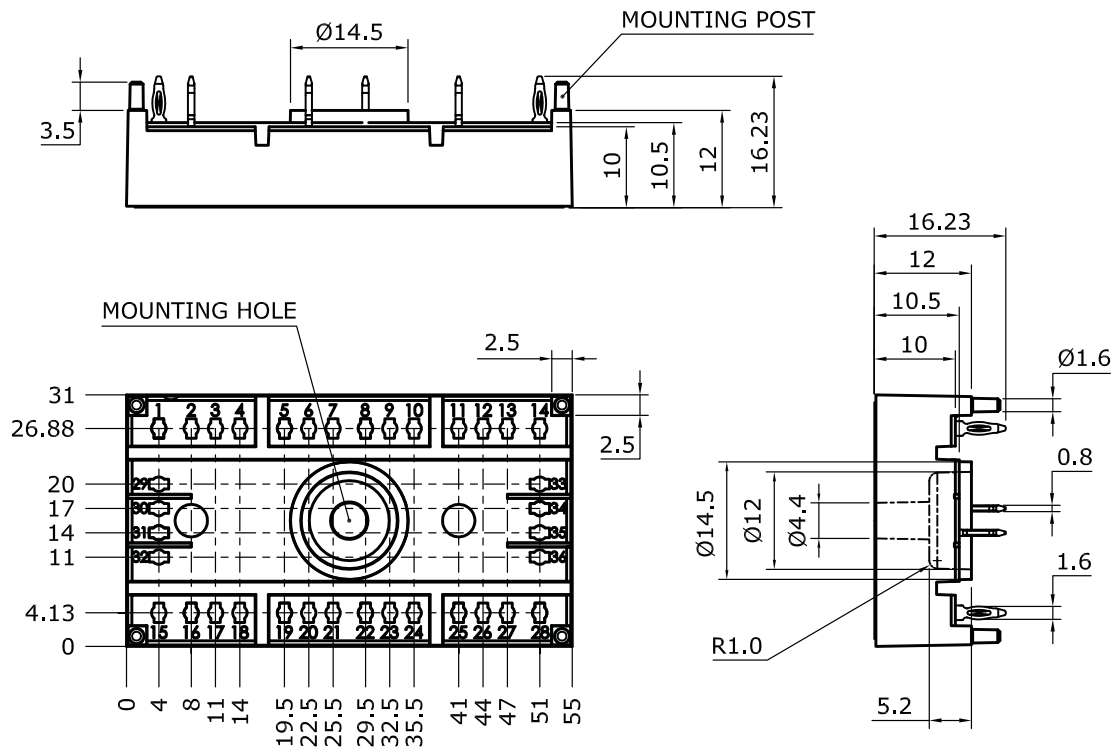


Fig. 10: Typ. Diode forward charact., incl.  $R_{CC+EE}$

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Dimensions: mm

Tolerance system: ISO 2768-m



Suggested drilled hole diameter for terminal pins in the circuit board:

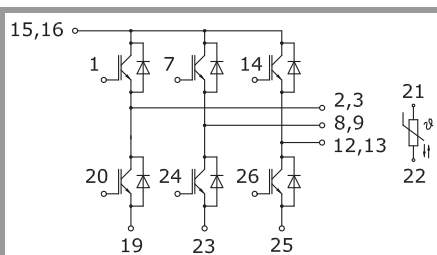
- minimum: 1.575 mm
- typical: 1.6 mm
- maximum: 1.625 mm

Suggested hole diameter for the mounting post in the circuit board:

- 2 mm

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GD-ET

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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