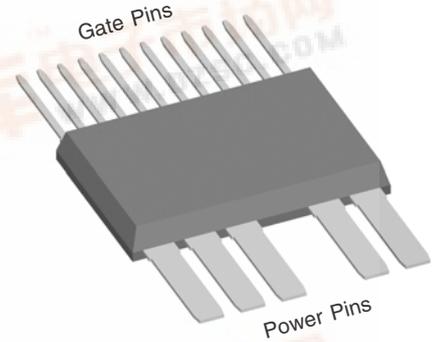
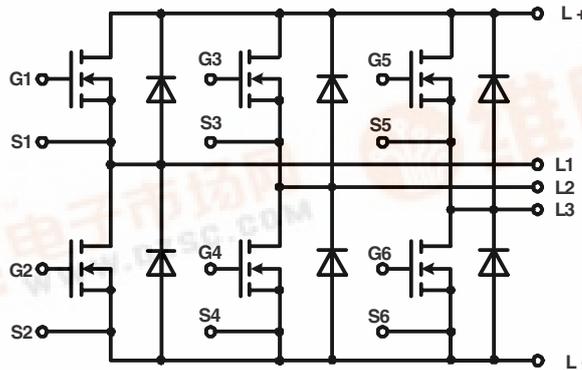


# Three phase full bridge with Trench MOSFETs in DCB isolated high current package

$V_{DSS} = 75\text{ V}$   
 $I_{D25} = 125\text{ A}$   
 $R_{DSon\ typ.} = 3.7\text{ m}\Omega$



### MOSFETs

Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	75	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	125	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	95	A
$I_{F25}$	$T_C = 25^{\circ}\text{C (diode)}$	130	A
$I_{F90}$	$T_C = 90^{\circ}\text{C (diode)}$	85	A

### Applications

- AC drives
- in automobiles
    - electric power steering
    - starter generator
  - in industrial vehicles
    - propulsion drives
    - fork lift drives
  - in battery supplied equipment

### Features

- MOSFETs in trench technology:
  - low  $R_{DSon}$
  - optimized intrinsic reverse diode
- package:
  - high level of integration
  - high current capability
  - auxiliary terminals for MOSFET control
  - terminals for soldering or welding connections
  - isolated DCB ceramic base plate with optimized heat transfer

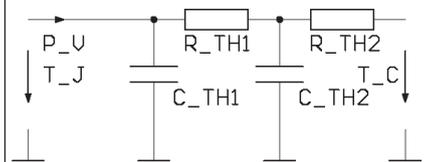
Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$R_{DSon}$	on chip level at $V_{GS} = 10\text{ V}; I_D = 60\text{ A}$ } $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		3.7 6.4	4.5 mΩ	
$V_{GSth}$	$V_{DS} = 20\text{ V}; I_D = 1\text{ mA}$	2		4 V	
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.1	1 μA mA	
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2 μA	
$Q_g$ $Q_{gs}$ $Q_{gd}$	} $V_{GS} = 10\text{ V}; V_{DS} = 60\text{ V}; I_D = 25\text{ A}$		91 19 28	nC nC nC	
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$		} $V_{GS} = 10\text{ V}; V_{DS} = 30\text{ V};$ $I_D = 25\text{ A}; R_G = 10\ \Omega$		36 56 130 50	ns ns ns ns
$V_F$			(diode) $I_F = 60\text{ A}; V_{GS} = 0\text{ V}$	0.9	1.4
$t_{rr}$	(diode) $I_F = 20\text{ A}; -di/dt = 100\text{ A}/\mu\text{s}; V_{DS} = 30\text{ V}$		90		ns
$R_{thJC}$ $R_{thJH}$	with heat transfer paste			1.1	0.85 K/W K/W



**Component**

Symbol	Conditions	Maximum Ratings	
$I_{RMS}$	per pin in main current paths (L+, L-, L <sub>1</sub> , L <sub>2</sub> , L <sub>3</sub> ) may be additionally limited by external connections	300	A
$T_{VJ}$		-40...+175	°C
$T_{stg}$		-55...+125	°C
$V_{ISOL}$	$I_{ISOL} \leq 1$ mA; 50/60 Hz; t = 1 min	1000	V~
$F_C$	Mounting force with clip	50 - 250	N

Symbol	Conditions	Characteristic Values		
		(T <sub>VJ</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
$R_{pin\ to\ chip}$			0.6	mΩ
$C_p$	coupling capacity between shorted pins and mounting tab in the case		160	pF
Weight	typ.		25	g

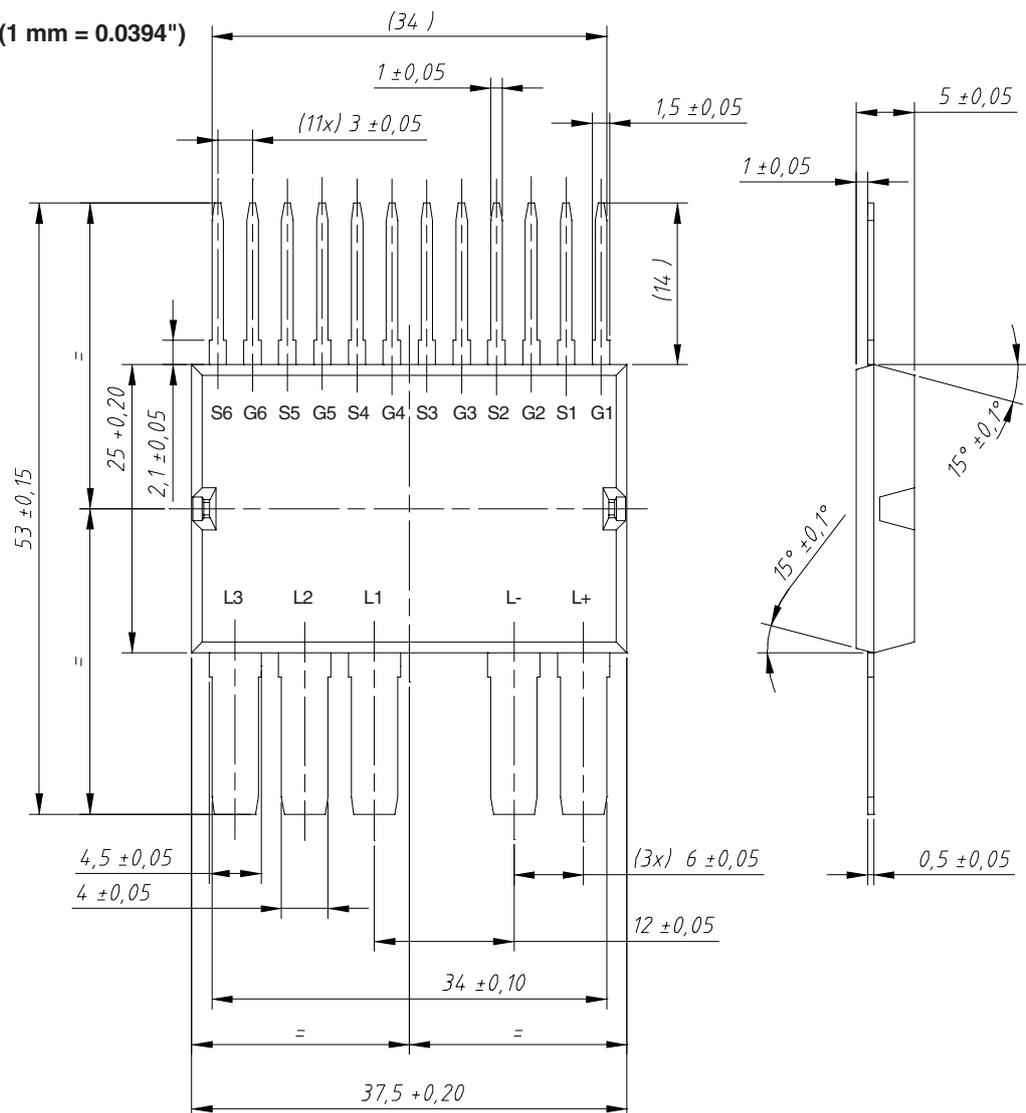
**Equivalent Circuits for Simulation**
**Thermal Response**


junction - case (typ.)

$$C_{th1} = 0.039\ J/K; R_{th1} = 0.28\ K/W$$

$$C_{th2} = 0.069\ J/K; R_{th2} = 0.57\ K/W$$

Dimensions in mm (1 mm = 0.0394")



IXYS reserves the right to change limits, test conditions and dimensions.

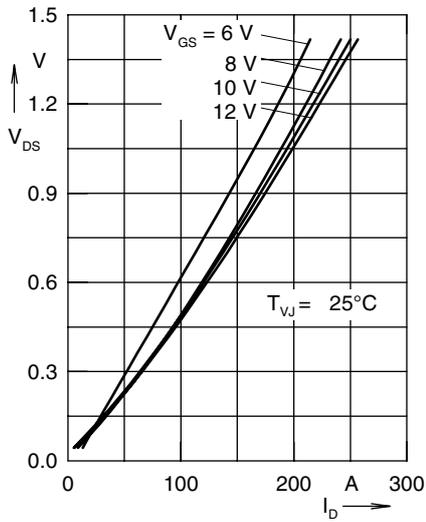


Fig. 1: typ. output characteristics  
 $[V_{DS} = I_D (R_{DSon} + 2x R_{pin\ to\ chip})]$

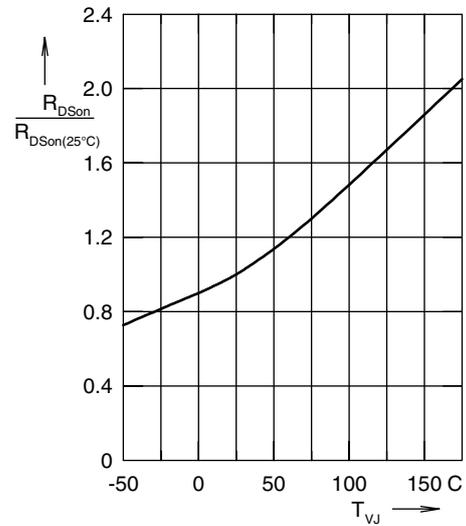


Fig. 2: typ. dependence of  $R_{DSon}$  on temperature

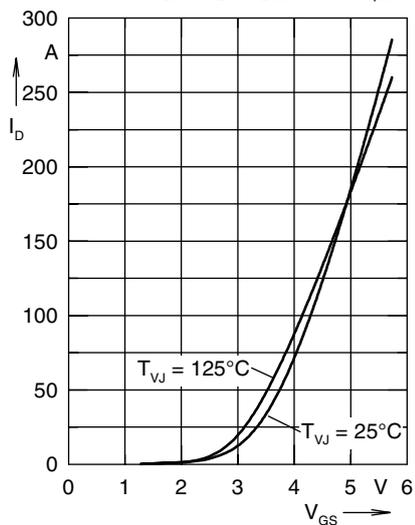


Fig. 3: typ. transfer characteristics

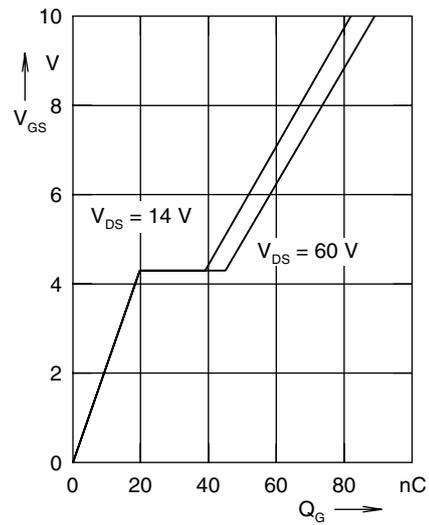


Fig. 4: typ. gate charge characteristics

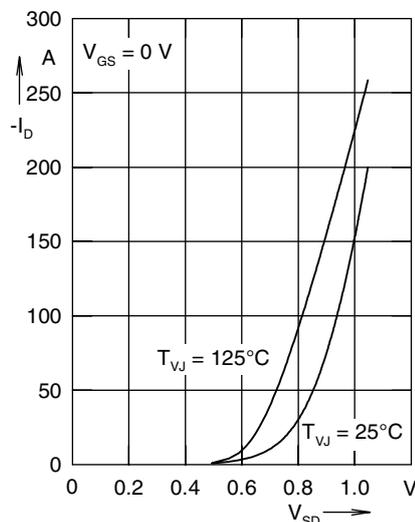


Fig. 5: typ. conduction characteristics of body diode

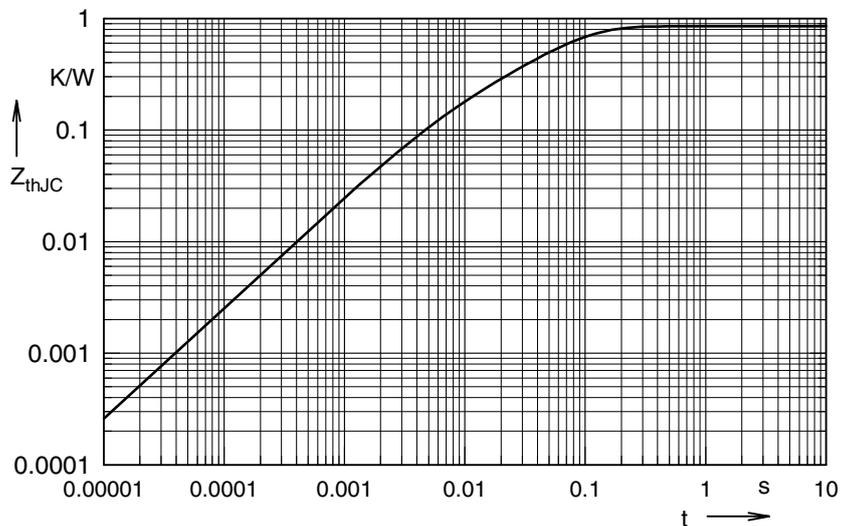


Fig. 6: typ. transient thermal impedance