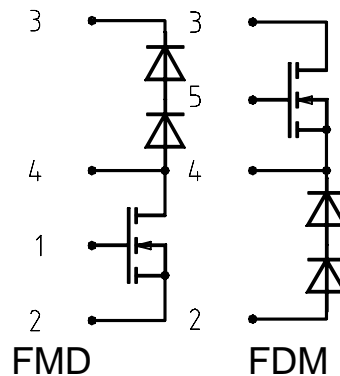


# HiPerFET™ Power Mosfets

-Chopper Topologies-  
in ISOPLUS i4-PAC™

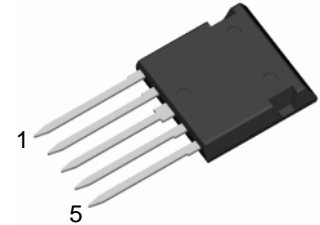
## FMD 21-05QC FDM 21-05QC



$$I_{D25} = 21 \text{ A}$$

$$V_{DSS} = 500 \text{ V}$$

$$R_{DSon} = 220 \text{ m}\Omega$$



MOSFET		
Symbol	Conditions	Maximum Ratings
$V_{DSS}$	$T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$	500 V
$V_{GS}$		$\pm 20$ V
$I_{D25}$	$T_C = 25^\circ\text{C}$	21 A
$I_{D90}$	$T_C = 90^\circ\text{C}$	15 A

### Features

- HiPerFET™ technology
  - low  $R_{DSon}$
  - low gate charge for high frequency operation
  - unclamped inductive switching (UIS) capability
  - dv/dt ruggedness
  - fast intrinsic reverse diode
- HiPerDyn™ FRED
  - consisting of series connected diodes
  - enhanced dynamic behaviour for high frequency operation
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - enlarged creepage towards heatsink
  - application friendly pinout
  - low inductive current path
  - high reliability
  - industry standard outline

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$R_{DSon}$	$V_{GS} = 10 \text{ V}; I_D = I_{D90}$			220 m $\Omega$	
$V_{GSth}$	$V_{DS} = 20 \text{ V}; I_D = 4 \text{ mA}$	2		4 V	
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		250	25 $\mu\text{A}$ 25 $\mu\text{A}$	
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			200 nA	
$Q_g$ $Q_{gs}$ $Q_{gd}$	} $V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = I_{D90}$		95	nC	
				27	nC
				40	nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	} $V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS};$ $I_D = I_{D90}; R_G = 2 \Omega$		28	ns	
				30	ns
				55	ns
				16	ns
$V_F$	(MOSFET diode) $I_F = 15 \text{ A}; V_{GS} = 0 \text{ V}$		0.9	V	
$R_{thJC}$				0.5 K/W	

### Applications

- chopper for power factor correction
- supply of high frequency transformer
  - switched mode power supplies
  - welding converters

**Free Wheeling Diode (data for series connection)**

Symbol	Conditions	Maximum Ratings	
$V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
$I_{F25}$	$T_C = 25^{\circ}\text{C}$	60	A
$I_{F90}$	$T_C = 90^{\circ}\text{C}$	35	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 15\text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.2	3.2	V
$I_R$	$V_R = V_{RRM}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.25	0.25	mA
$I_{RM}$ $t_{rr}$	$I_F = 30\text{ A}; di_F/dt = -500\text{ A}/\mu\text{s}; T_{VJ} = 125^{\circ}\text{C}$ $V_R = 300\text{ V}$	tbd	tbd	A ns
$R_{thJC}$	(per diode)			0.65 K/W

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$		-55...+150	$^{\circ}\text{C}$
$T_{stg}$		-55...+125	$^{\circ}\text{C}$
$V_{ISOL}$	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	2500	V~
$F_c$	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$d_S, d_A$	pin - pin	1.7		mm
$d_S, d_A$	pin - backside metal	5.5		mm
$R_{thCH}$	with heatsink compound		0.15	K/W
<b>Weight</b>			9	g

**Dimensions in mm (1 mm = 0.0394")**
