

Q-Class Power MOSFETs

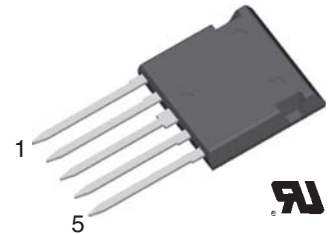
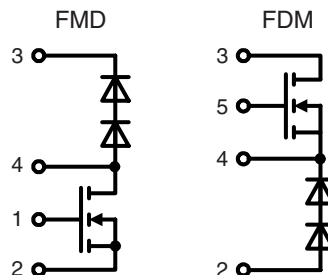
Chopper Topologies
in ISOPLUS i4-PAC™

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

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

$$R_{DSon \text{ typ.}} = 190 \text{ m}\Omega$$

Preliminary data



MOSFET

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

Features

- Q-Class Power MOSFET technology
 - low R_{DSon}
 - low gate charge for high frequency operation
 - unclamped inductive switching (UIS) capability
 - dv/dt ruggedness
- HiPerDyn™ FRED
 - consisting of series connected diodes
 - enhanced dynamic behaviour for high frequency operation
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - UL registered E72873
 - low coupling capacity between pins and heatsink
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability
 - industry standard outline

Applications

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

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 mΩ
V_{GSth}	$V_{DS} = 20 \text{ V}; I_D = 0.25 \text{ mA}$	2.5		4.5 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	250 μA μA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			200 nA
Q_g Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = 14 \text{ A}$		95 20 42	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS}$ $I_D = 14 \text{ A}; R_G = 2 \Omega$		20 20 50 15	ns ns ns ns
R_{thJC} R_{thJH}	with heat transfer paste		0.93	0.5 K/W K/W

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}	$T_C = 90^{\circ}\text{C}$	40	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 15 \text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.5	2.8	V
I_R	$V_R = V_{RRM}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.13	0.13	mA
I_{RM} t_{rr}	$I_F = 30 \text{ A}; di_F/dt = -500 \text{ A}/\mu\text{s}; T_{VJ} = 125^{\circ}\text{C}$ $V_R = 300 \text{ V}$	9	40	A ns
R_{thJC} R_{thJH}	with heat transfer paste	1.3	0.65	K/W 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.
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		9		g

Dimensions in mm (1 mm = 0.0394")

