Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

IXYS

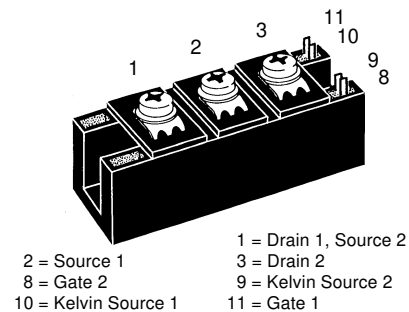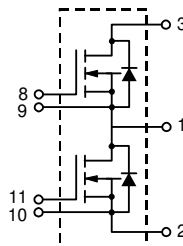# Dual Power HiPerFET™ Module

VMM 85-02F

V_{DSS} = 200 V
I_{D25} = 84 A
$R_{DS(on)}$ = 25 mΩ

Phaseleg Configuration
High dv/dt, Low t_{rr}, HDMOS™ Family

1 = Drain 1, Source 2
2 = Source 1
3 = Drain 2
8 = Gate 2
9 = Kelvin Source 2
10 = Kelvin Source 1
11 = Gate 1

Symbol	Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	200	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 10 kΩ	200	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	84	A
I_{D80}	T_C = 80°C	63	A
I_{DM}	T_C = 25°C, t_p = 10 µs, pulse width limited by T_{JM}	335	A
P_{tot}	T_C = 25°C	370	W
T_J		-40 ... +150	°C
T_{JM}		150	°C
T_{stg}		-40 ... +125	°C
V_{ISOL}	50/60 Hz t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA t = 1 s	3600	V~
M_d	Mounting torque (M5 or 10-32 UNF)	2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M5)	2.5-4/22-35	Nm/lb.in.
Weight	Typical including screws	130	g

Features

- Two MOSFET's in phaseleg config.
- International standard package
- Direct copper bonded Al$_2$O$_3$ ceramic base plate
- Isolation voltage 3600 V~
- Low $R_{DS(on)}$ HDMOS™ process
- Low package inductance for high speed switching
- Kelvin source contact

Applications

- Switched-mode and resonant-mode power supplies
- Uninterruptible power supplies (UPS)

Advantages

- Easy to mount with two screws
- Space and weight savings
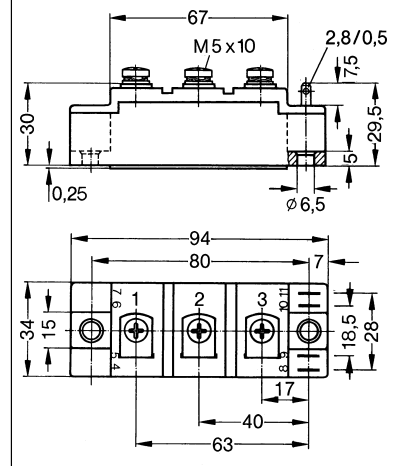- High power density
- Low losses

Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V	200			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 8 mA	2		4	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0			500	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0 V, T_J = 25°C			400	µA
	V_{DS} = 0.8 • V_{DSS}, V_{GS} = 0 V, T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25}		20	25	mΩ
	Pulse test, t ≤ 300 µs, duty cycle d ≤ 2%				

Data per MOSFET unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions

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Symbol	Conditions	Characteristic Values (T$_J$ = 25°C, unless otherwise specified)		
		min.	typ.	max.
g$_{fs}$	V$_{DS}$ = 10 V; I$_D$ = 0.5 • I$_{D25}$ pulsed	40	60	S
C$_{iss}$			9600	15000 pF
C$_{oss}$	V$_{GS}$ = 0 V, V$_{DS}$ = 25 V, f = 1 MHz		1800	4500 pF
C$_{rss}$			620	1500 pF
t$_{d(on)}$			70	ns
t$_r$	V$_{GS}$ = 10 V, V$_{DS}$ = 0.5 • V$_{DSS}$, I$_D$ = 0.5 • I$_{D25}$		80	ns
t$_{d(off)}$	R$_G$ = 1 Ω (External), resistive load		200	ns
t$_f$			100	ns
Q$_g$			380	450 nC
Q$_{gs}$	V$_{GS}$ = 10 V, V$_{DS}$ = 0.5 • V$_{DSS}$, I$_D$ = 0.5 • I$_{D25}$		70	110 nC
Q$_{gd}$			190	230 nC
R$_{thJC}$				0.33 K/W
R$_{thCH}$	heatsink compound applied		0.2	K/W
d$_S$	Creepage distance on surface	12.7		mm
d$_A$	Strike distance through air	9.6		mm
a	Allowable acceleration			50 m/s^2

Dimensions in mm (1 mm = 0.0394")

Source-Drain Diode

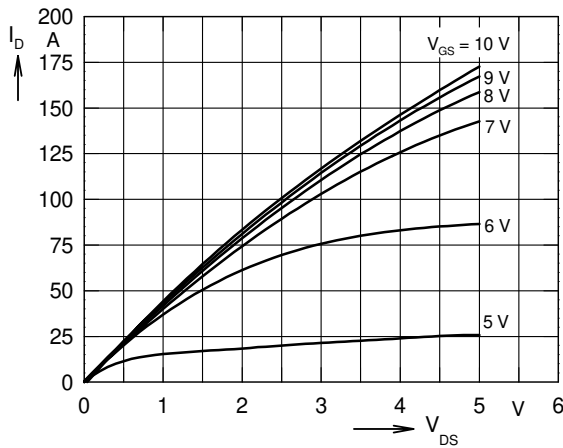| Symbol	Conditions	Characteristic Values (T$_J$ = 25°C, unless otherwise specified)		
		min.	typ.	max.
I$_S$	V$_{GS}$ = 0 V			84 A
I$_{SM}$	Repetitive; pulse width limited by T$_{JM}$			335 A
V$_{SD}$	I$_F$ = I$_S$; V$_{GS}$ = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2%		0.9	1.2 V
t$_{rr}$	I$_F$ = I$_S$, -di/dt = 100 A/μs, V$_{DS}$ = 100 V, V$_{GS}$ = 0 V	200	400	ns

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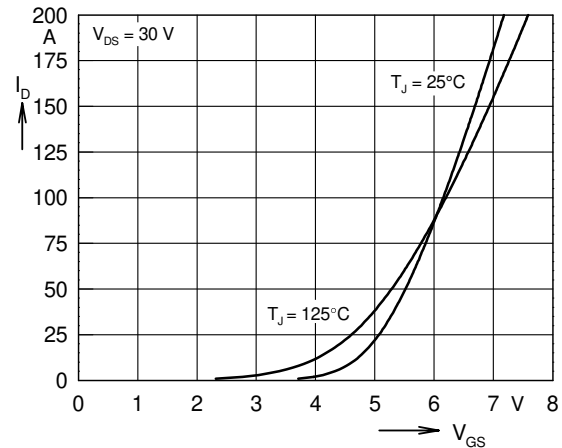Fig. 1 Typical output characteristics $I_D = f(V_{DS})$

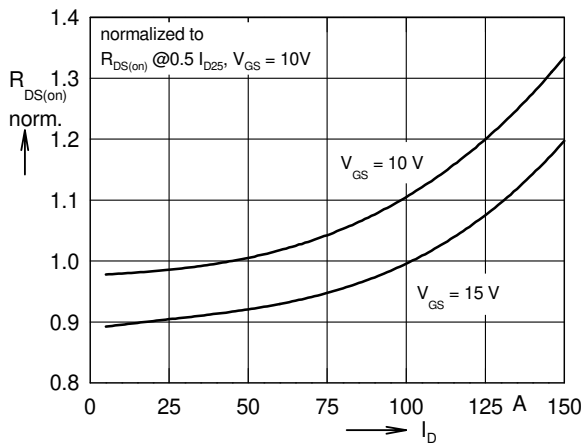Fig. 2 Typical transfer characteristics $I_D = f(V_{GS})$
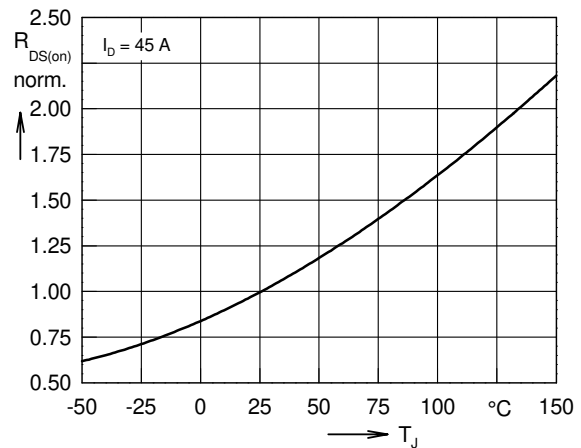

Fig. 3 Typical normalized $R_{DS(on)} = f(I_D)$

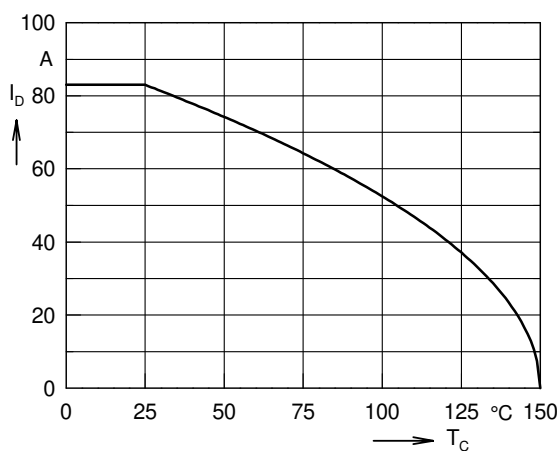Fig. 4 Typical normalized $R_{DS(on)} = f(T_J)$

Fig. 5 Continuous drain current $I_D = f(T_C)$
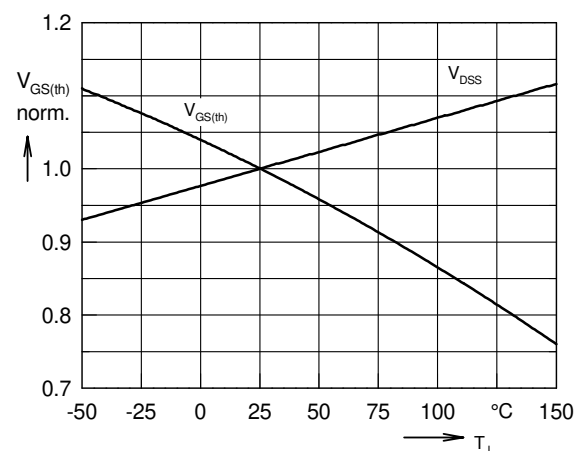

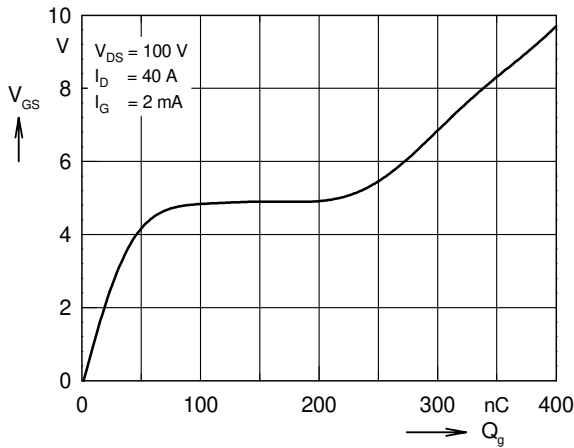Fig. 6 Typical normalized $V_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$

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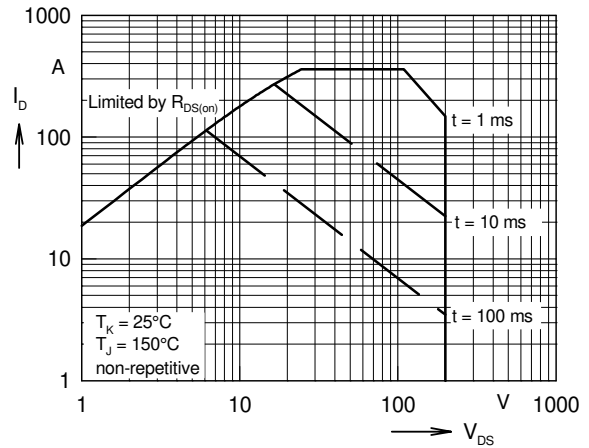Fig. 7 Typical turn-on gate charge characteristics

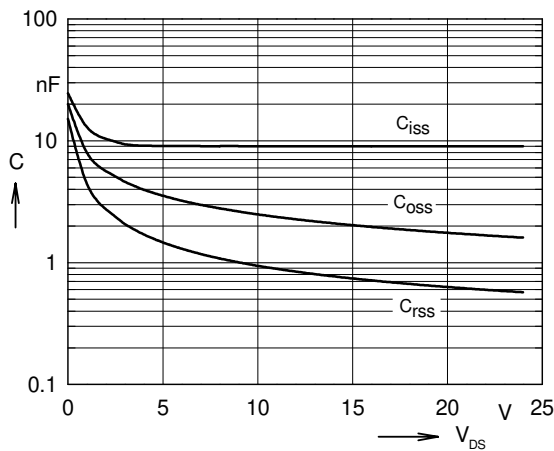Fig. 8 Forward Safe Operating Area, $I_D = f (V_{DS})$

Fig. 9 Typical capacitances $C = f (V_{DS})$, $f = 1$ MHz
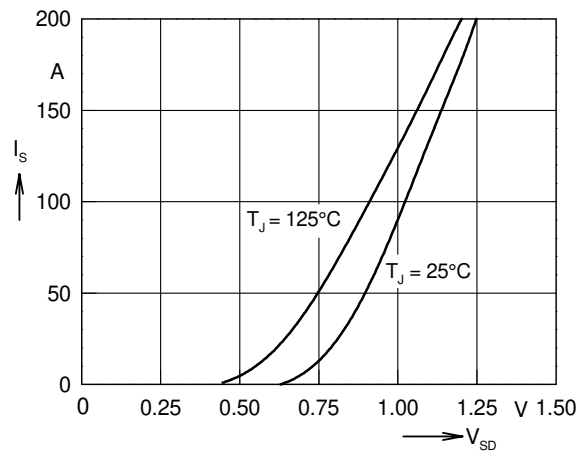

Fig. 10 Typical forward characteristics of reverse diode, $I_S = f (V_{SD})$
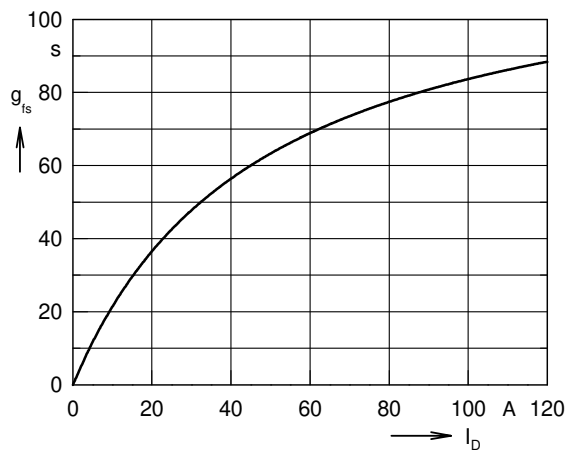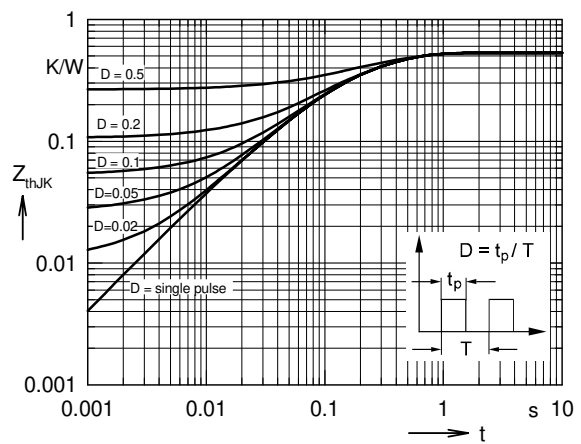

Fig. 11 Typical transconductance $g_{fs} = f (I_D)$

Fig. 12 Transient thermal resistance $Z_{thJK} = f (t_p)$

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