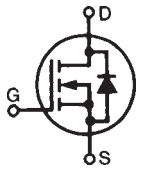
IXYS

HiPerFET™ Power MOSFET Q2-Class

IXFR38N80Q2

V_{DSS} = 800V
I_{D25} = 28A
$R_{DS(on)}$ ≤ 240mΩ
t_{rr} ≤ 250ns

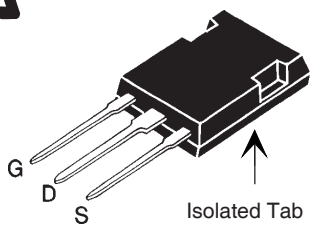


(Electrically Isolated Back Surface)

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	800	V
V_{DGR}	T_J = 25°C to 150°C, R_{GS} = 1MΩ	800	V
V_{GSS}	Continuous	± 30	V
V_{GSM}	Transient	± 40	V
I_{D25}	T_C = 25°C	28	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	150	A
I_A	T_C = 25°C	38	A
E_{AS}	T_C = 25°C	4	J
dV/dt	$I_S \le I_{DM}$, $V_{DD} \le V_{DSS}$, $T_J \le 150°C$	20	V/ns
P_D	T_C = 25°C	500	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum lead temperature for soldering	300	°C
T_{SOLD}	Plastic body for 10s	260	°C
V_{ISOL}	50/60 Hz, RMS, 1 minute	2500	V~
F_C	Mounting force	20..120/4.5..27	N/lb.
Weight		5	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0V, I_D = 3mA	800			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA	3.0		5.5	V
I_{GSS}	V_{GS} = ± 30V, V_{DS} = 0V			± 200	nA
I_{DSS}	$V_{DS} = V_{DSS}$			25	μA
	V_{GS} = 0V, T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10V, I_D = 19A, Note 1			240	mΩ

ISOPLUS247 (IXFR)
E153432



G = Gate D = Drain
S = Source

Features

- Double metal process for low gate resistance
- Silicon chip on DCB substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Epoxy meet UL 94 V-0, flammability classification
- Avalanche energy and current rated
- Fast intrinsic Rectifier

Advantages

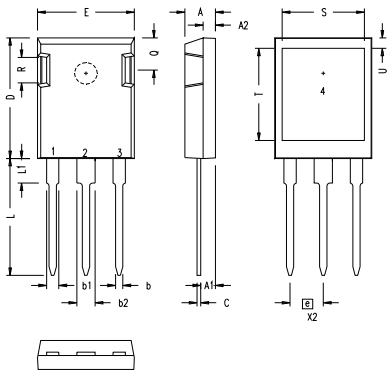
- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10V, I_D = 19A, Note 1	25	37		S
C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		9500		pF
C_{oss}			888		pF
C_{rss}			185		pF
$t_{d(on)}$	**Resistive Switching Times**		20		ns
t_r	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 19A		16		ns
$t_{d(off)}$	R_G = 1Ω (External)		60		ns
t_f			12		ns
$Q_{g(on)}$	V_{GS} = 10V, V_{DS} = 0.5 • V_{DSS}, I_D = 19A		190		nC
Q_{gs}			44		nC
Q_{gd}			88		nC
R_{thJC}				0.25	°C/W
R_{thCS}			0.15		°C/W

Source-Drain Diode (T_J = 25°C unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0V			38	A
I_{SM}	Repetitive, pulse width limited by T_{JM}			150	A
V_{SD}	$I_F = I_S$, V_{GS} = 0V, Note 1			1.5	V
t_{rr}	I_F = 25A, -di/dt = 100A/μs			250	ns
Q_{RM}	V_R = 100V, V_{GS} = 0V		1		μC
I_{RM}			10		A

Note 1: Pulse test, t ≤ 300μs; duty cycle, d ≤ 2%.

ISOPLUS247 (IXFR) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

1 – GATE
2 – DRAIN (COLLECTOR)
3 – SOURCE (EMITTER)
4 – NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

Fig. 1. Output Characteristics @ 25ºC

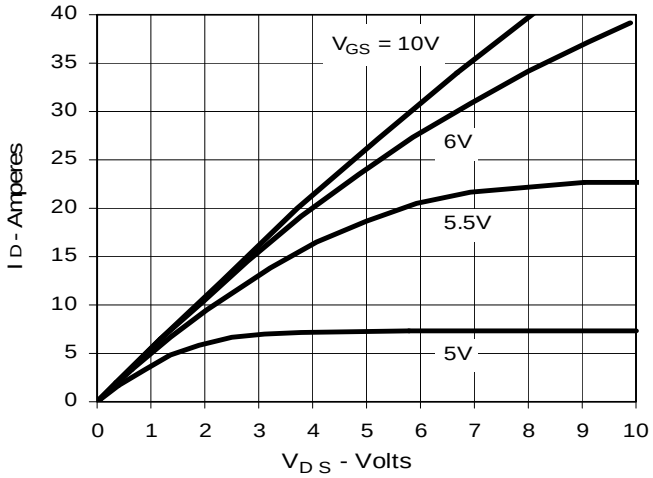


Fig. 2. Extended Output Characteristics @ 25ºC

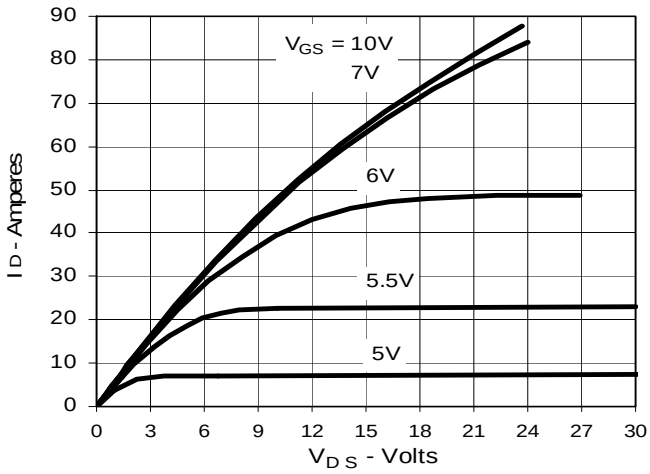


Fig. 3. Output Characteristics @ 125ºC

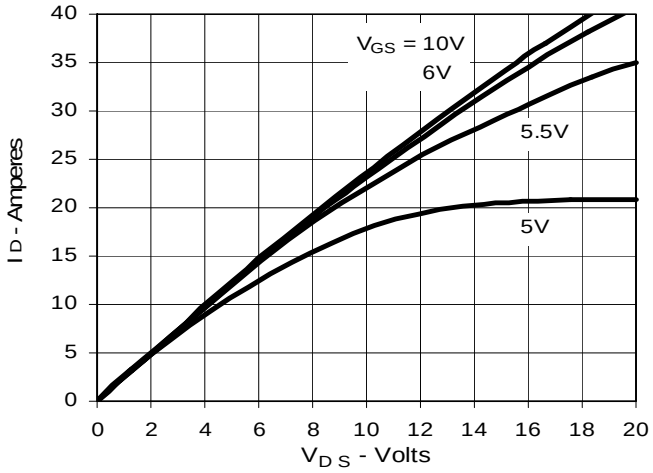


Fig. 4. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Junction Temperature

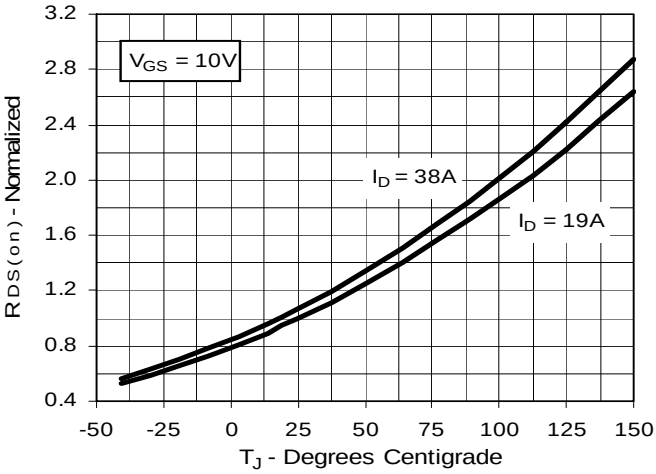


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. I_D

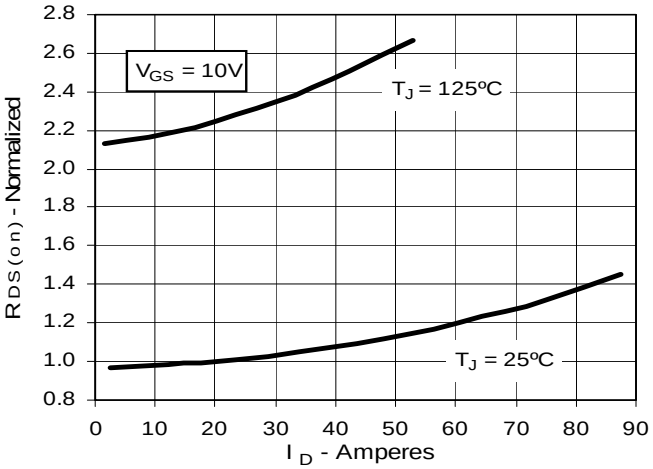


Fig. 6. Drain Current vs. Case Temperature

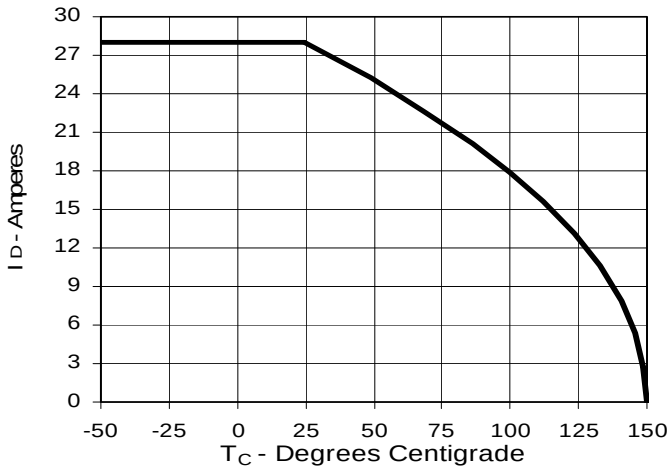


Fig. 7. Input Admittance

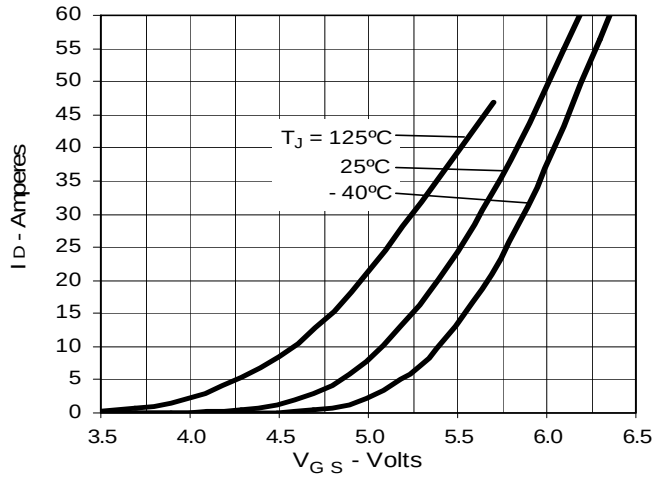


Fig. 8. Transconductance

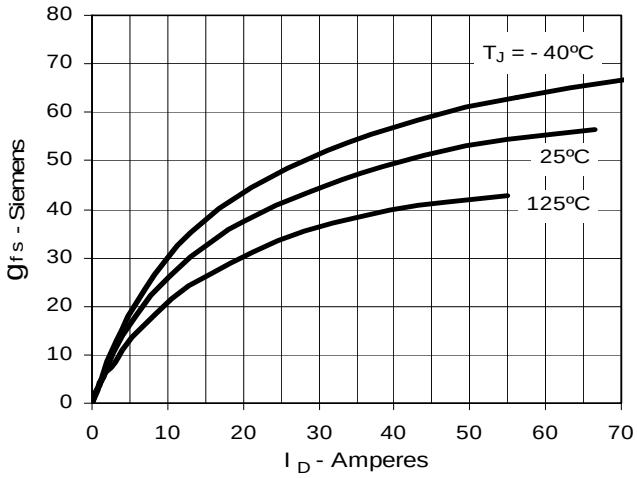


Fig. 9. Source Current vs.Source-To-Drain Voltage

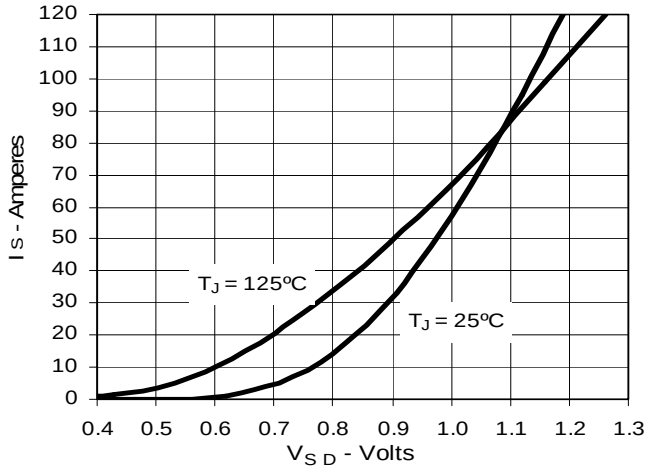


Fig. 10. Gate Charge

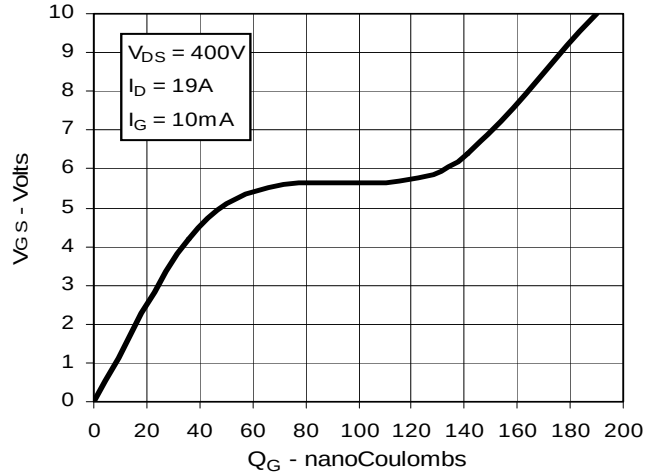


Fig. 11. Capacitance

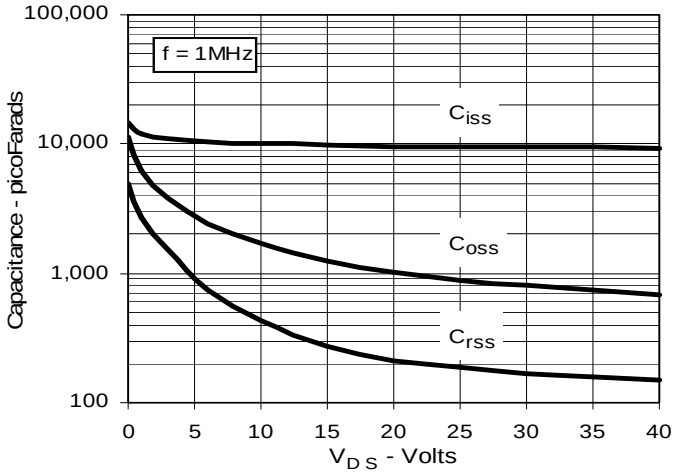


Fig. 12. Maximum Transient Thermal Impedance