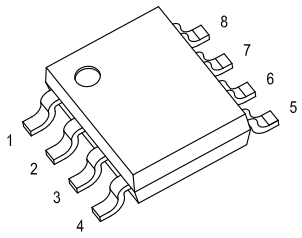
GP30N06Q

30V N-Channel MOSFET

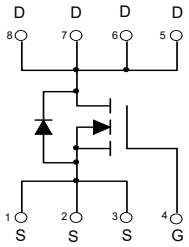
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	4.8mΩ@10V	18A
	6.6mΩ@4.5V	

SOP8



Schematic diagram



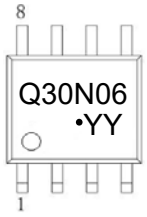
Feature

- High density cell design for ultra low $R_{DS(ON)}$
- Excellent package for good heat dissipation

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

MARKING:



Q30N06 = Device Code

YY = Date Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25℃	I_D	18	A
	T_A = 100℃		13	A
Pulsed Drain Current		I_{DM}	72	A
Power Dissipation		P_D	3.1	W
Thermal Resistance from Junction to Ambient[a]	t ≤ 10sec.	$R_{\theta JA}$	40	℃/W
	Steady-State		75	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[b]						
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	3	V
Drainsource onresistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A		4.8	6	mΩ
		V_{GS} = 4.5V, I_D = 10A		6.6	8.5	
Forward transconductance	g_{FS}	V_{DS} = 5V, I_D = 10A	10			S
Dynamic Characteristics[c]						
Input Capacitance	C_{iss}	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		2987		pF
Output Capacitance	C_{oss}			306		
Reverse Transfer Capacitance	C_{rss}			280		
Gate resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2		Ω
Switching Characteristics[c]						
Total Gate Charge	Q_g	V_{DS} = 30V, V_{GS} = 10V, I_D = 14A		62.3		nC
GateSource Charge	Q_{gs}			37.1		
GateDrain Charge	Q_{gd}			47.7		
Turnon delay time	$t_{d(on)}$	V_{DD} = 15V, R_G = 1.5Ω,V_{GS} = 10V, R_L = 0.75Ω		15		ns
Turnon rise time	t_r			40		
Turnoff delay time	$t_{d(off)}$			60		
Turnoff fall time	t_f			18		
Diode Characteristics						
Diode Forward Voltage[b]	V_{SD}	V_{GS} = 0V , I_S = 15A			1.2	V

Notes :

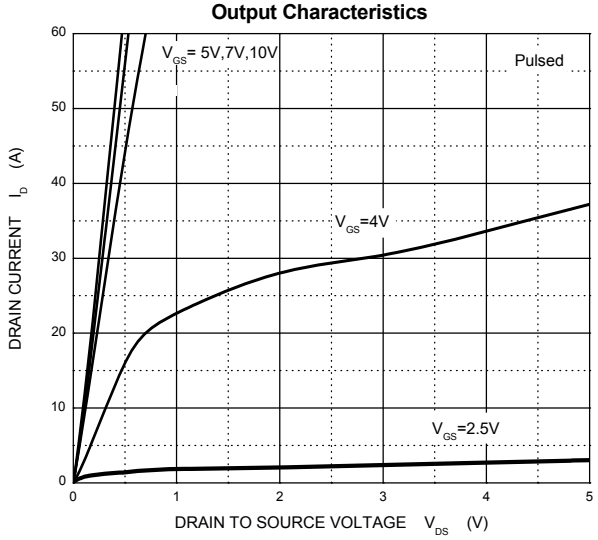
a.$R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR4 board with 2oz, in a still air environment with T_A = 25° C.

b.Pulse Test: Pulse Width ≤ 380μs, Duty Cycle ≤ 2%.

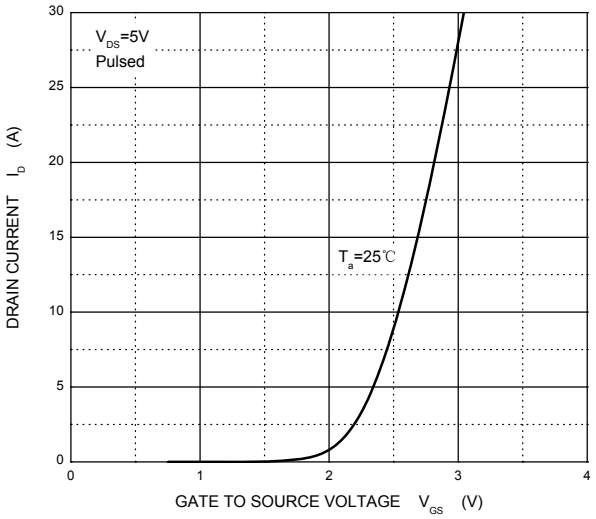
c.Guaranteed by design, not subject to production

Typical Characteristics

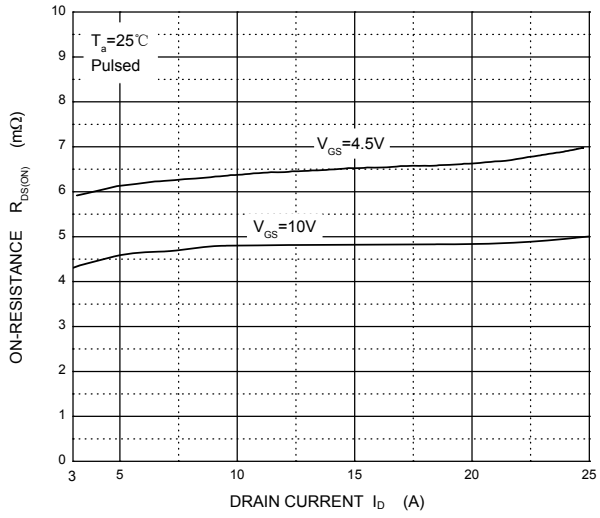
Output Characteristics



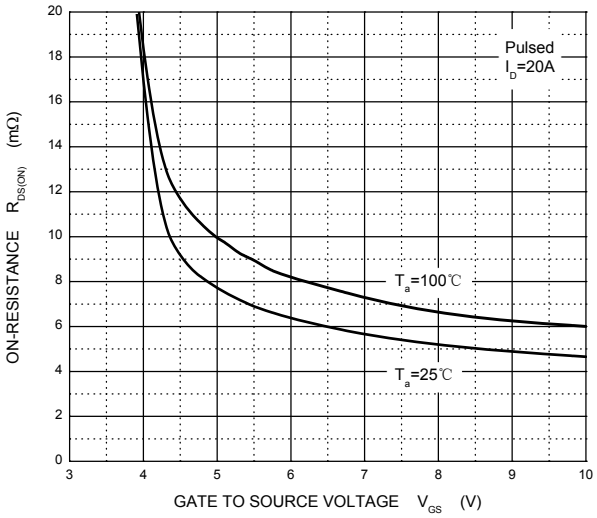
Transfer Characteristics



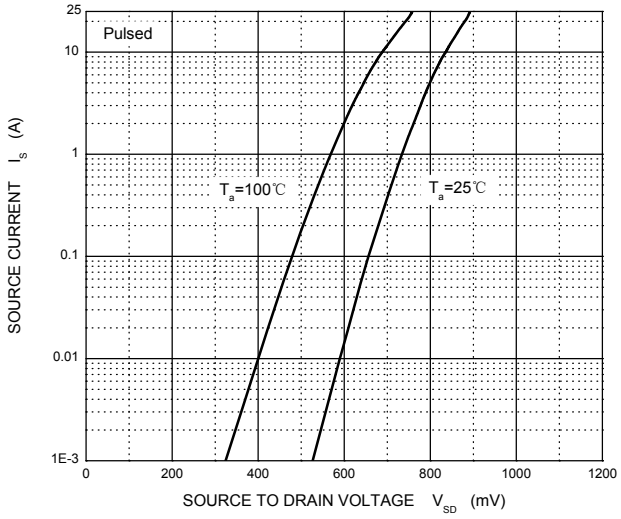
$R_{DS(ON)}$ — I_D



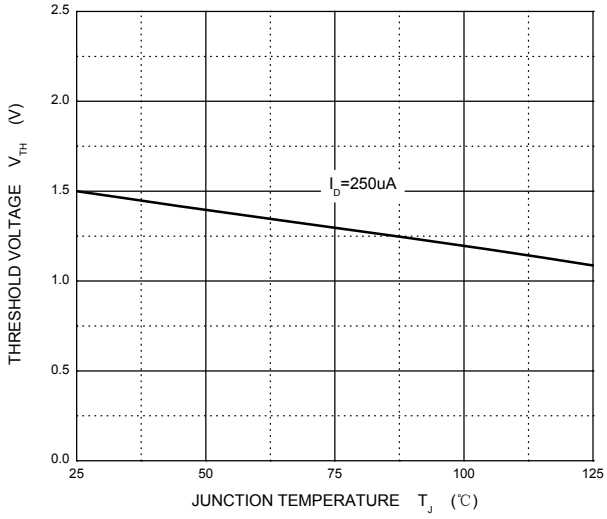
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

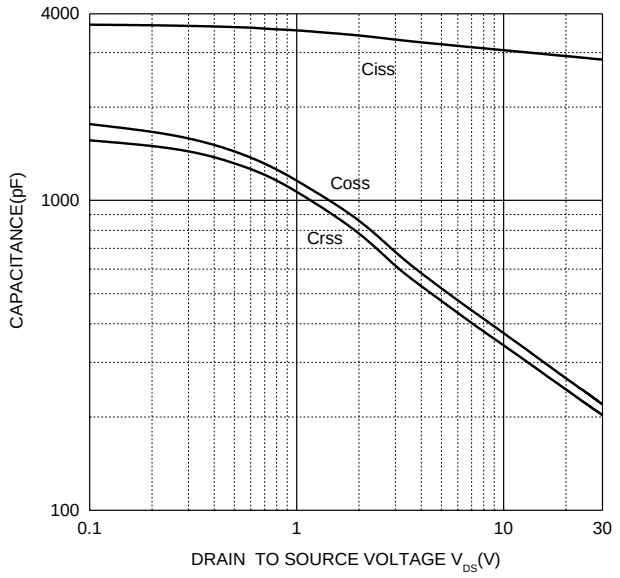


Threshold Voltage

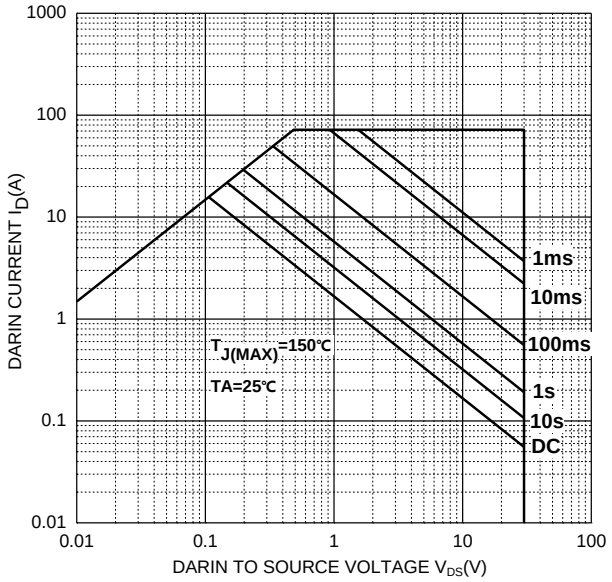


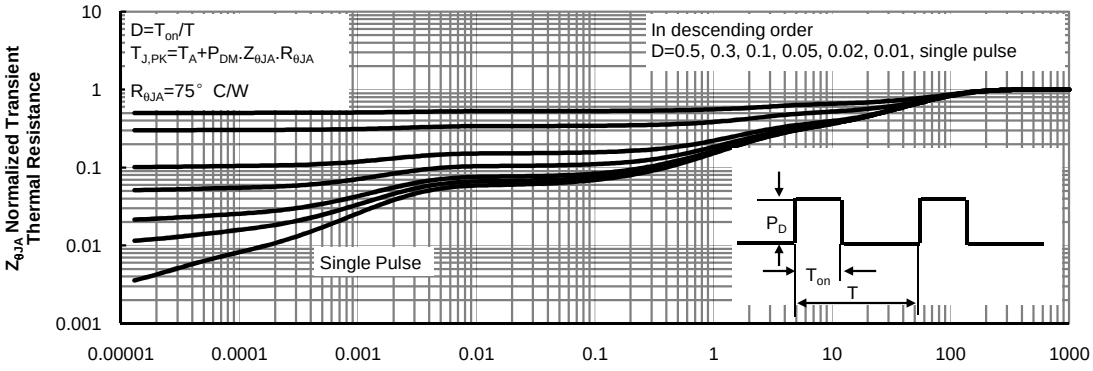
Typical Characteristics

Capacitance Characteristics



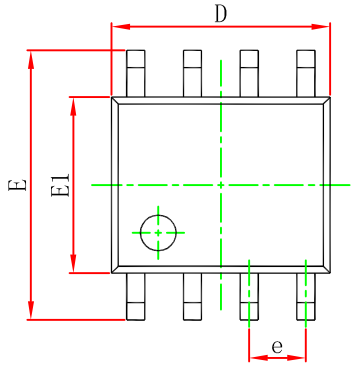
Safe Operation Area

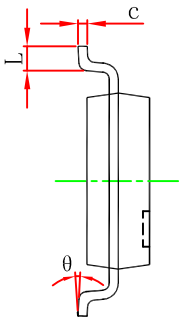


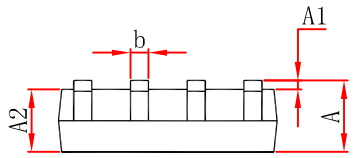


Normalized Maximum Transient Thermal Impedance

SOP8 Package Information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°