SIRECT
ELECTRONIC

PS60N60

N-Channel Enhancement Mode Field Effect Transistor

- 60Amp 60Volt

☐ Application

-Servomotor control

-Power MOSFET gate drivers

-Other switching applications

☐ Feature

-Small surface mounting type

-High density cell design for low $R_{DS(ON)}$

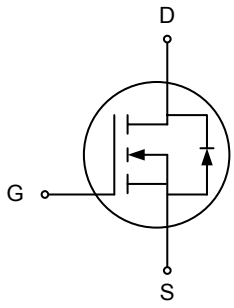
-Suitable for high packing density

-Rugged and reliable

-High saturation current capability

-Voltage controlled small signal switch

☐ Circuit



☐ Construction

-N-Channel Enhancement

☐ Absolute Maximum Ratings

PARAMETER	SYMBOL	PS60N60	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuos @ T_A = 125°C (Note 1)	I_D	60	A
-Pulsed (Note 2)	I_{DM}	300	
Drain-Source Diode Forward Current	I_S	60	A
Maximum Power Dissipation	P_D	110	W
Operting Junction and Storage Temperature Range	T_J , T_{STG}	-55 to +175	°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	°C/W

Note: 1.Surface Mounted on FR-4 Board, t≦2%

2.Pulse Test : 380μs pulse width, 2% duty cycle

June 2009 / Rev.6.4

PS60N60

Electrical Characteristics

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V	-	-	1	μA
Gate-Body Leakage	I_{GSS}	V_{GS} = ±16V, V_{DS} = 0V	-	-	±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	2	-	4	V
Ststic Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 60A	-	16	18	mΩ
		V_{GS} = 4.5V, I_D = 30A		20	23	
Forward Transconductance	g_{FS}	V_{DS} = 25V, I_D = 30A	-	50	-	S
SWITCHING CHARACTERSTICS						
Total Gate Charge	Q_g	V_{DS} = 30V, I_D = 60A V_{GS} = 10V, R_{GEN} = 4.7Ω	-	54	75	nC
Gate-Source Charge	Q_{gs}		-	10	-	
Gate-Drain Charge	Q_{gd}		-	20	-	
Turn-On Delay Time	$T_{D(on)}$	V_{DD} = 30V, I_D = 30A V_{GEN} = 10V, R_L = 10Ω R_{GEN} = 4.7Ω	-	15	-	nS
Rise Time	t_r		-	60	-	
Turn-Off Delay Times	$T_{D(off)}$		-	40	-	nS
Fall Time	t_f		-	16	-	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} = 10V, V_{GS} = 0V f = 1.0MHz	-	1700	-	pF
Output Capacitance	C_{OSS}		-	400	-	
Reverse Transfer Capacitance	C_{RSS}		-	135	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 60A	-	1.5	-	V

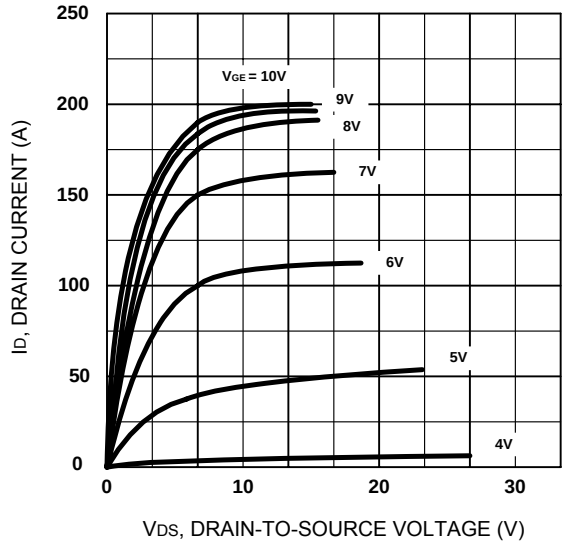


Figure 1. Output Characteristics

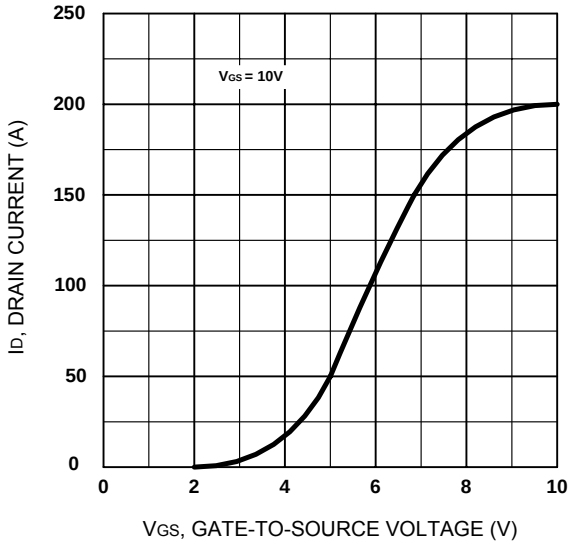


Figure 2. Transfer Characteristics

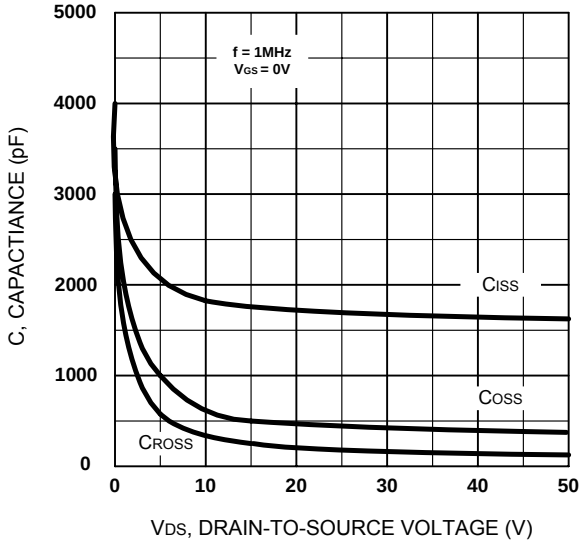


Figure 3. Capacitance Characteristics

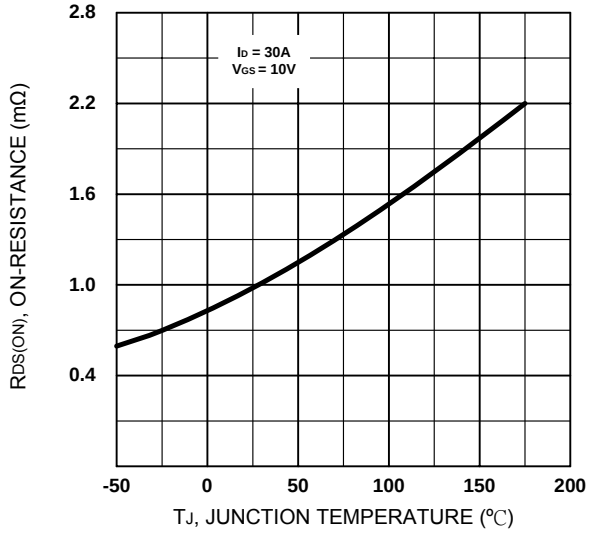


Figure 4. On-Resistance Variation with temperature

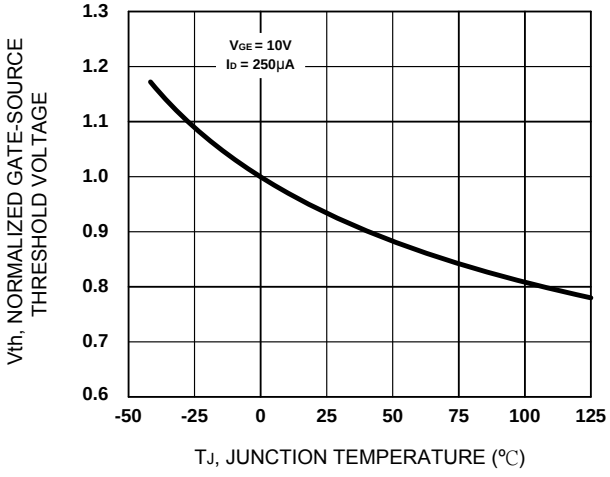


Figure 5. Gate Threshold Variation with Temperature

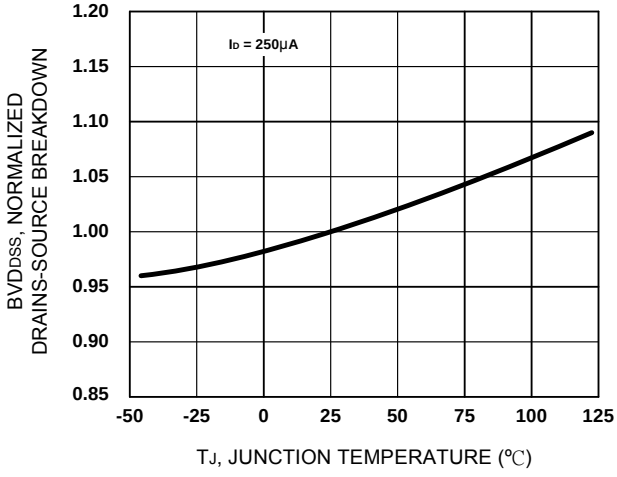


Figure 6. Breakdown Voltage Variation with Temperature

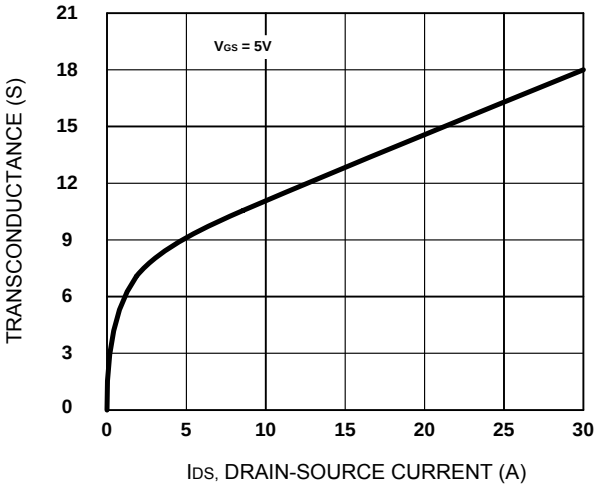


Figure 7. Transconductance Variation with Drain Current

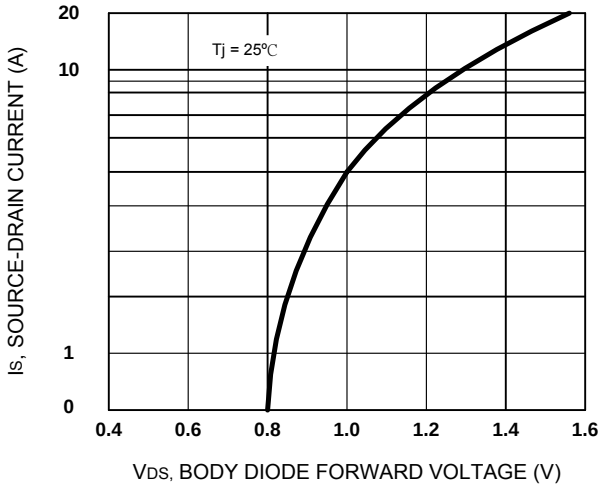


Figure 8. Body Diode Forward Voltage Variation with Source Current

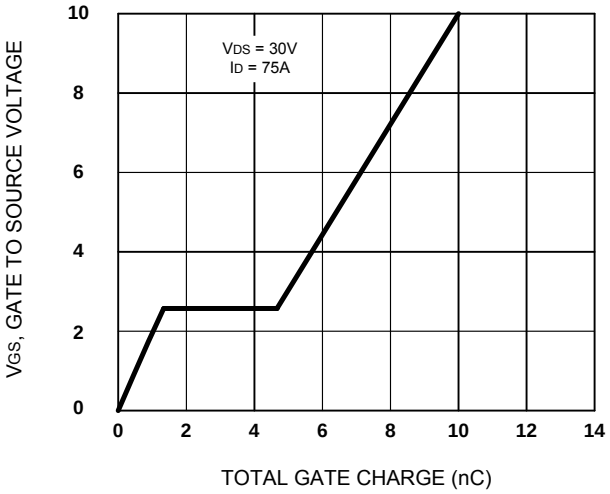
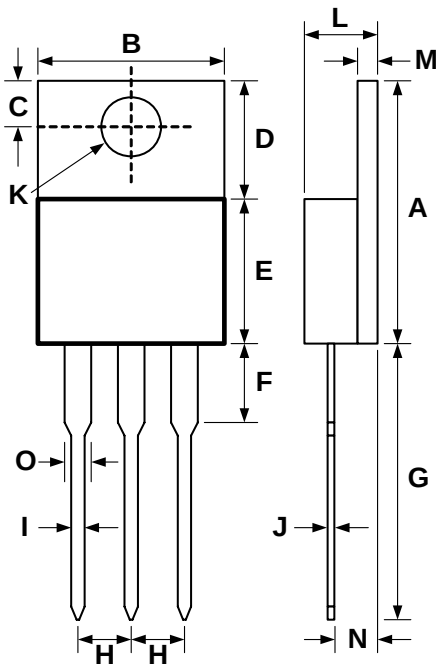


Figure 9. Gate Charge

TO-220AB PACKAGE



G D S

DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.579	.606	14.70	15.40	
B	.392	.411	9.95	10.45	
C	.104	.116	2.65	2.95	
D	.248	.272	6.30	6.90	
E	.325	.350	8.25	8.90	
F	.126	.157	3.20	4.00	
G	.492	.551	12.50	14.00	
H	.096	.108	2.45	2.75	
I	.028	.039	0.70	1.00	
J	.010	.022	0.25	0.55	
K	.146	.157	3.70	4.00	
L	.167	.187	4.25	4.75	
M	.045	.057	1.15	1.45	
N	.089	.114	2.25	2.90	
O	.047	.055	1.20	1.40	