

DATA SHEET

PS20N06

N-CHANNEL ENHANCEMENT MODE MOSFET

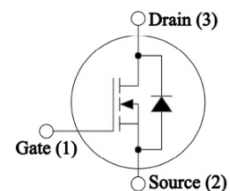
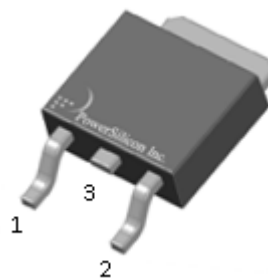
VOLTAGE 60 V **CURRENT** 20A

FEATURES

- $R_{DS(ON)}$: (35m Ω @ $V_{GS}=10V$,
40m Ω @ $V_{GS}=4.5V$)
- SUPER HIGH DENSE CELL DESIGN TRENCH TECHNOLOGY
- EXCEPTIONAL ON-RESISTANCE AND MAXIMUM DC CURRENT CAPABILITY
- LEAD FREE AND HALOGEN-FREE

MECHANICAL DATA

- PACKAGE: TO-252
- TERMINALS: MIL-STD-202, METHOD 208



CASE: TO-252

ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate- Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current ($V_{GS}=10V$)	$T_A = 25^\circ\text{C}$	I_D	20	A
	$T_A = 100^\circ\text{C}$		14	A
Pulsed Drain Current		I_{DM}	60	A
Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	45	W
	$T_A = 70^\circ\text{C}$		32	W
Thermal Resistance Junction-Case		$R_{\theta JC}$	3.3	$^\circ\text{C} / \text{W}$
Operating Junction and Storage Temperature Range		T_{stg}	-55~175	$^\circ\text{C}$
		T_J		

ELECTRICAL CHARACTERISTICS

(T_{case}= 25°C unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	I _D = 250 μA , V _{GS} = 0	BV _{DSS}	60	-	-	V
Drain-Source Leakage Current	V _{GS} = 0V , V _{DS} = 60V	I _{DSS}	-	-	1	μA
Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} = 0V	I _{GSS}	-	-	±100	nA
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	V _{GS(th)}	1.2	-	2.5	V
Drain-Source On Resistance	V _{GS} = 10V, I _D = 20A	R _{DS(on)}	-	24	35	mΩ
	V _{GS} = 4.5V, I _D = 20A		-	30	40	
Diode Forward Voltage	I _S = 20A, V _{GS} = 0V	V _{SD}	-	-	1.2	V
DYNAMIC CHARACTERISTICS						
Input Capacitance	V _{DS} = 15V, f = 1MHz, V _{GS} = 0V	C _{iss}	-	590	-	pF
Output Capacitance		C _{oss}	-	70	-	pF
Reverse Transfer Capacitance		C _{rss}	-	64	-	pF
Turn-on Delay Time	V _{DD} = 30V , V _{GS} = 10V R _G = 3.0Ω , R _L = 3.0Ω	t _{d (on)}	-	6	-	nS
Rise Time		t _r	-	6.1	-	nS
Turn-off Delay Time		t _{d (off)}	-	17	-	nS
Fall Time		t _f	-	3	-	nS
Total Gate Charge	V _{DS} = 30V , I _D = 10 A V _{GS} = 10V	Q _g	-	25.3	-	nC
Gate-Source Charge		Q _{gs}	-	4.7	-	nC
Gate-Drain Charge		Q _{gd}	-	6.1	-	nC
Reverse Recovery Time	I _{SD} = 20A, dI _{SD} /dt = 100A/μS,	t _{rr}	-	30	-	nS
Reverse Recovery Charge	T _J = 150°C	Q _{rr}	-	50	-	nC

Note:

1. Pulse test: Pulse width ≤ 300μs, Duty cycle ≤ 2%

TYPICAL CHARACTERISTICS

Typical Electrical and Thermal Characteristics (Curves)

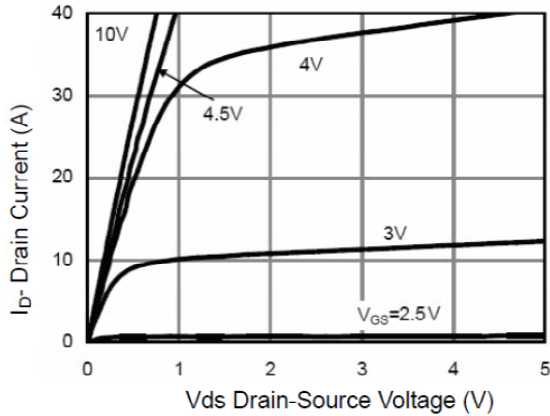


Figure 1 Output Characteristics

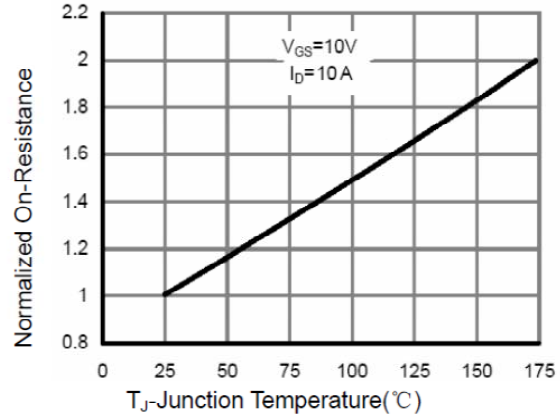


Figure 4 Rdson-Junction Temperature

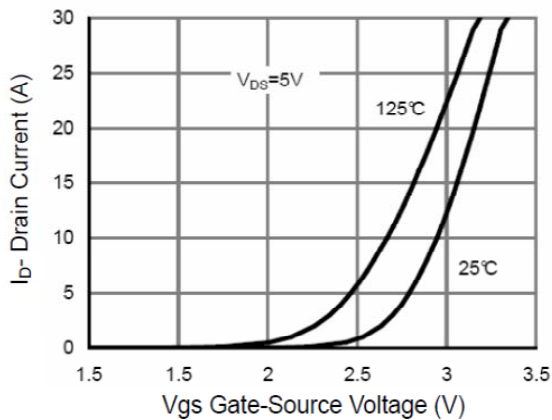


Figure 2 Transfer Characteristics

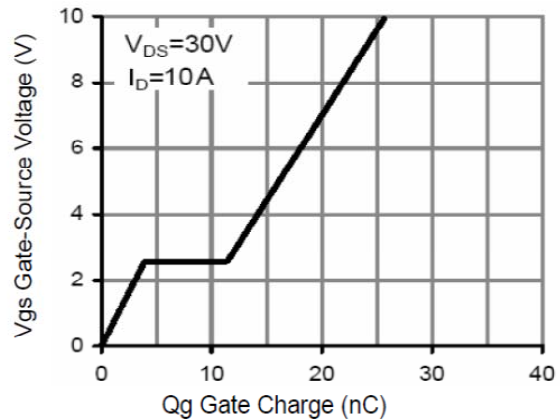


Figure 5 Gate Charge

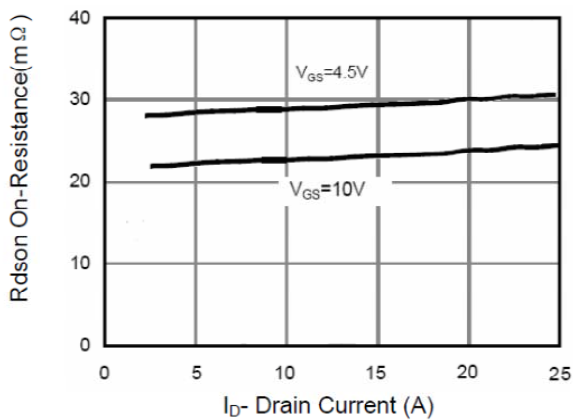


Figure 3 Rdson- Drain Current

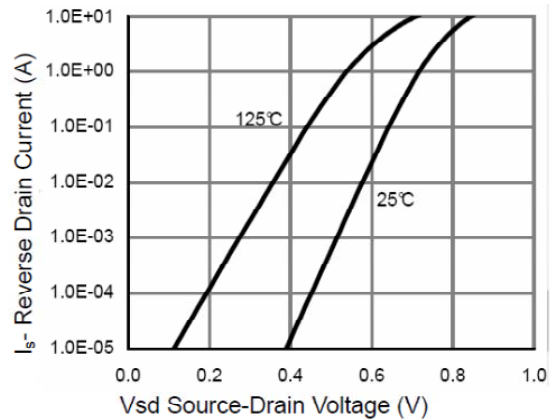


Figure 6 Source- Drain Diode Forward

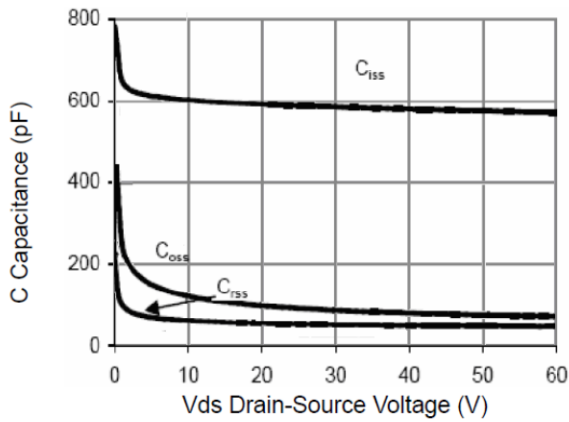


Figure 7 Capacitance vs Vds

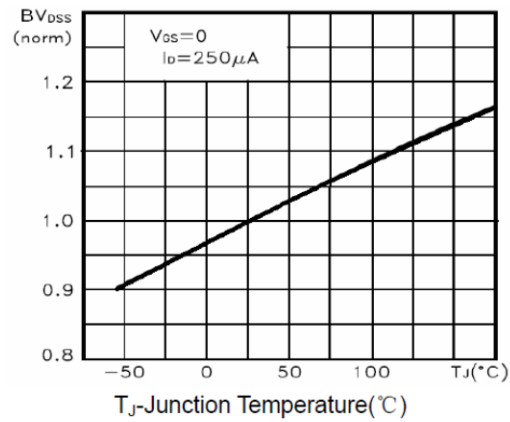


Figure 9 BV_{DSS} vs Junction Temperature

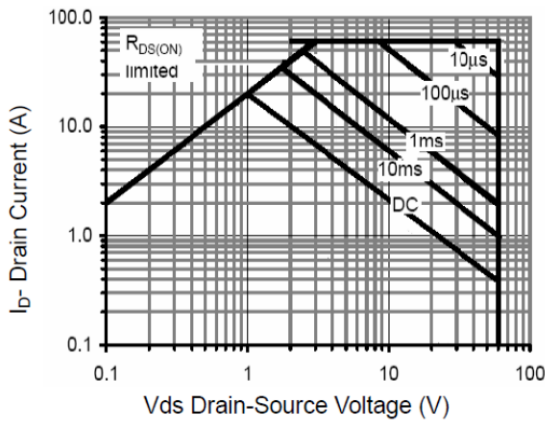


Figure 8 Safe Operation Area

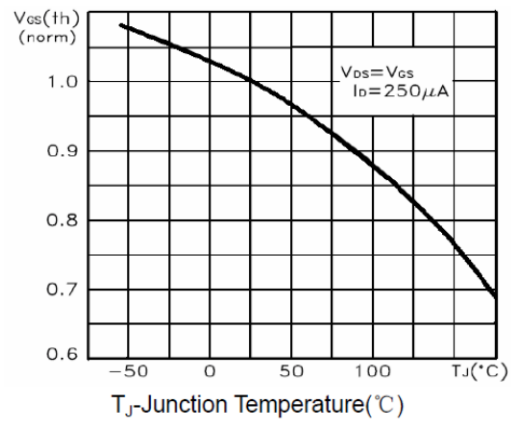


Figure 10 $V_{GS(th)}$ vs Junction Temperature

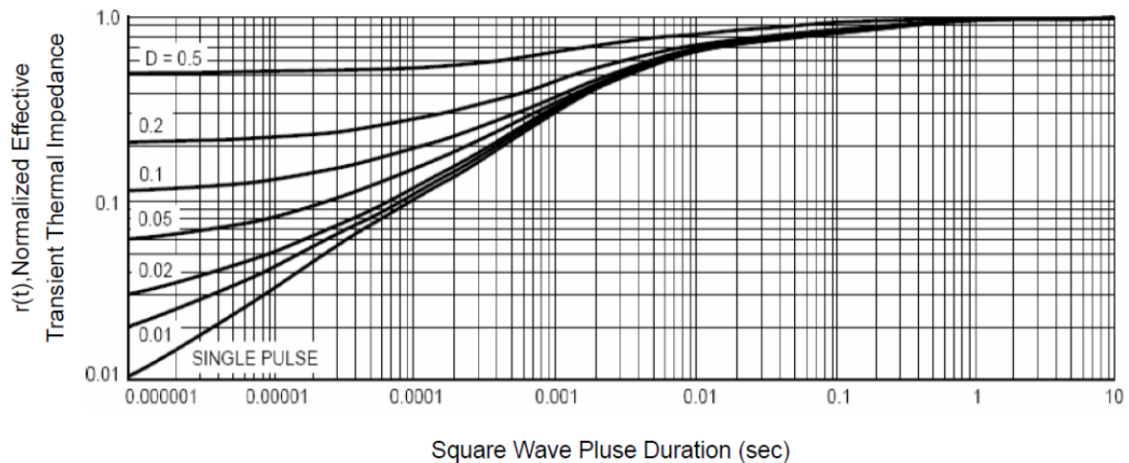
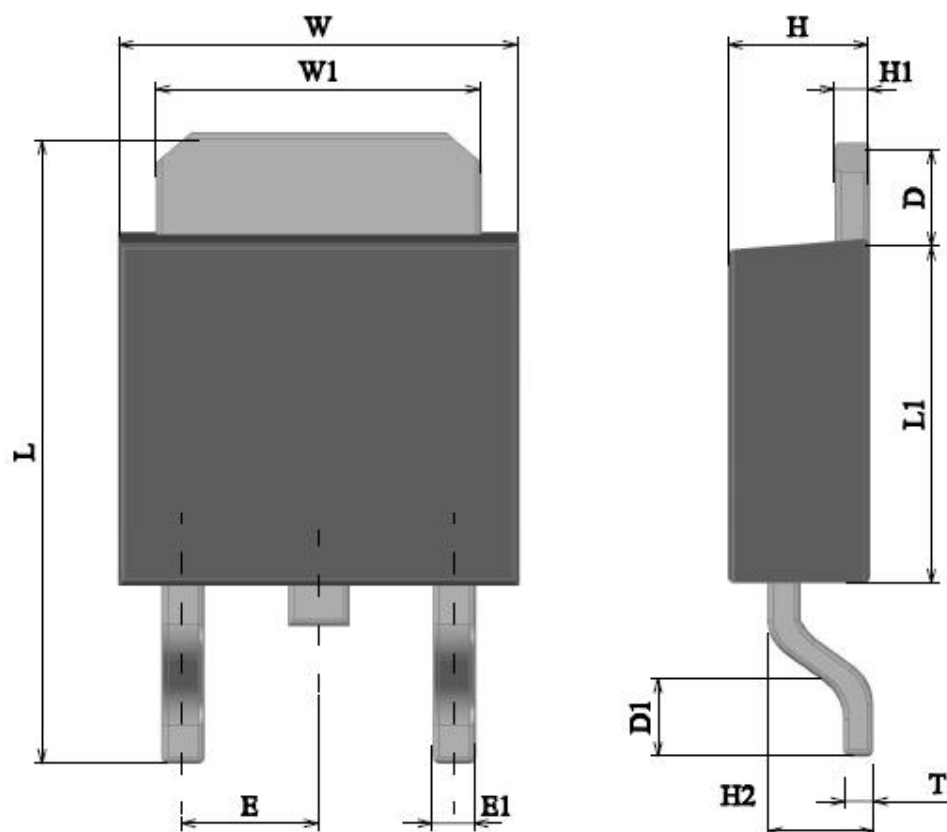


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252(DPAK) DIMENSION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
L	8.00	10.00	0.315	0.394
L1	5.30	5.70	0.209	0.224
D	0.77	1.60	0.030	0.063
D1	0.51	1.78	0.020	0.070
W	6.30	6.80	0.248	0.268
W1	4.45	5.50	0.175	0.217
E	2.3 Nominal		0.091 Nominal	
E1	-	0.97	-	0.038
H	2.03	2.53	0.080	0.100
H1	0.40	1.01	0.016	0.040
H2	1.30	1.80	0.051	0.071
T	0.43	0.60	0.017	0.024