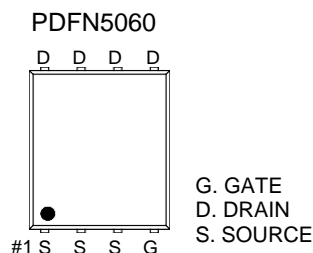


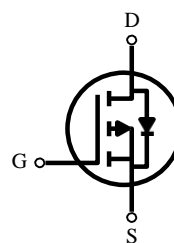
## P -Channel High Density Trench MOSFET

### Features:

- Super high dense cell trench design for low  $R_{DS(on)}$ .
- Rugged and reliable.
- Surface Mount package.



PRODUCT SUMMARY		
$V_{(BR)DSS}$	$R_{DS(o\ n)} \text{ (m}\Omega\text{) Max}$	$I_D$
-60V	33 @ $V_{GS} = -10V$	-20A
	40 @ $V_{GS} = -4.5V$	



### ABSOLUTE MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	TC=25°C	-20
		TC=100°C	-13
Pulsed Drain Current (Note 1)	$I_{DM}$	-78	A
Avalanche Current	$I_{AS}$	-19	
Single Pulse Avalanche Energy	L = 0.1mH	$E_{AS}$	26
Maximum Power Dissipation (Note 1)		TC=25°C	30
		TC=100°C	12
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to 150	°C

### TYPICAL THERMAL CHARACTERISTICS (Note 1)

Thermal Resistance, Junction-to-Case	$R_{thJC}$	4.3	°C/W
Thermal Resistance Junction-Ambient	$R_{thJA}$	48	°C/W

Note :

1. Pulse width limited by maximum junction temperature.

**ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)**

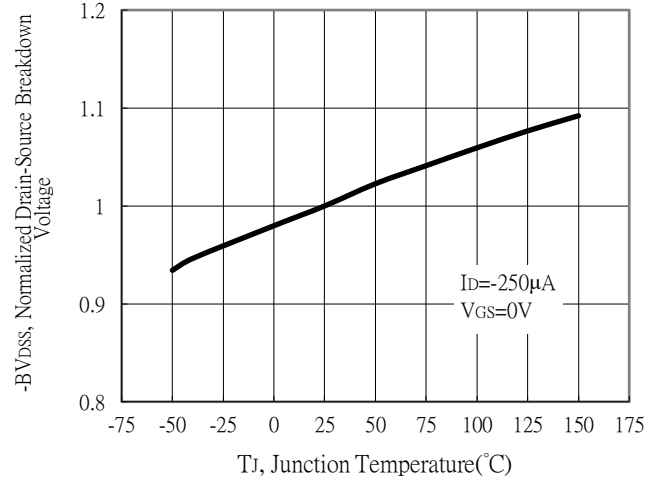
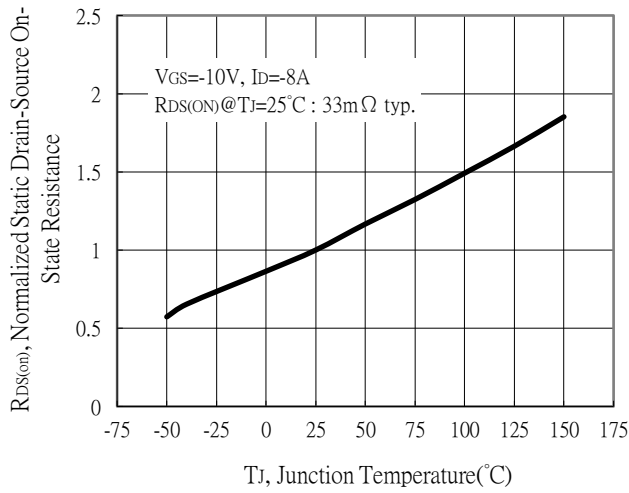
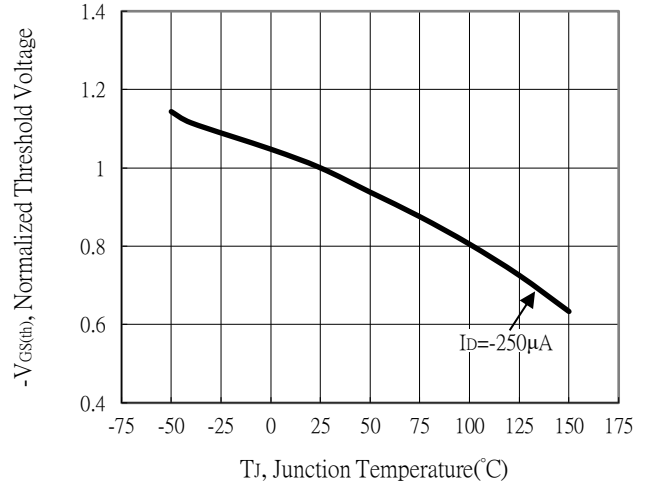
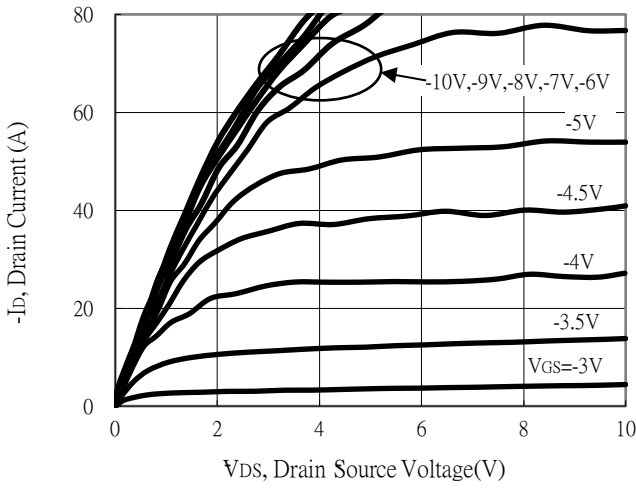
Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-60			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -48V, V_{GS} = 0V, T_j = 25^\circ C$			-1	uA
		$V_{DS} = -48V, V_{GS} = 0V, T_j = 125^\circ C$			-30	
Gate-Body Leakage	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>ON CHARACTERISTICS (Note 2)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	-1	-1.5	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -8A$		33	42	m $\Omega$
		$V_{GS} = -4.5V, I_D = -6A$		40	52	m $\Omega$
Forward Transconductance	gfs	$V_{DS} = -10V, I_D = -12A$		18		S
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = -30V, V_{GS} = 0V$ $f = 1.0MHz$		1348		pF
Output Capacitance	$C_{OSS}$			121		pF
Reverse Transfer Capacitance	$C_{RSS}$			88		pF
Gate Resisance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$		3.7		$\Omega$
<b>SWITCHING CHARACTERISTICS (Note 3)</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{DD} = -30V, I_D = -8A, V_{GS} = -10V$ $R_{GS} = 1 \Omega$		12		nS
Rise Time	tr			11		nS
Turn-Off Delay Time	$t_{d(OFF)}$			42		nS
Fall Time	tf			10		nS
Total Gate Charge (10V)	Qg				26	
Total Gate Charge (4.5V)	Qg	$V_{DS} = -30BV_{DSS}, I_D = -8A$ $V_{GS} = -10V$		18		nC
Gate-Source Charge	Qgs			5.1		nC
Gate-Drain Charge	Qgd			5.7		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Continuous Current	$I_S$			-19		A
Diode Forward Voltage (Note 2)	$V_{SD}$	$V_{GS} = 0V, I_S = I_F$		-0.8	-1.2	V

Note :

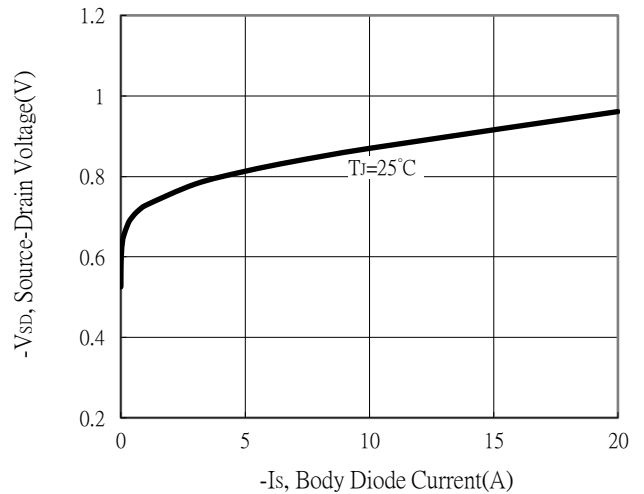
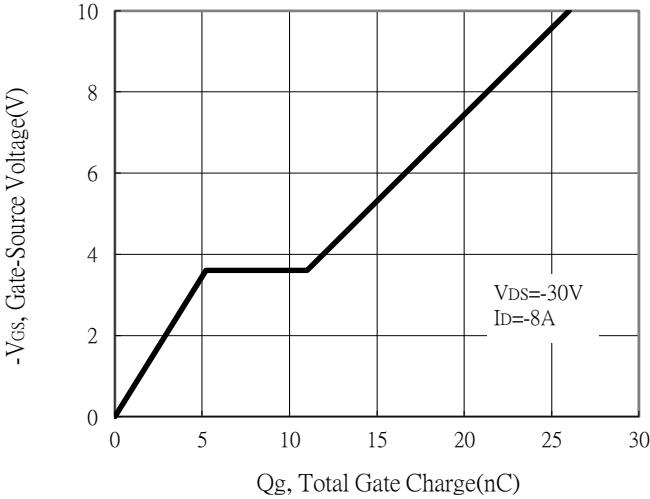
2. Pulse Test Pulse width  $\leq 300\mu sec$ , Duty Cycle  $\leq 2\%$

3. Independent of operating production testing .

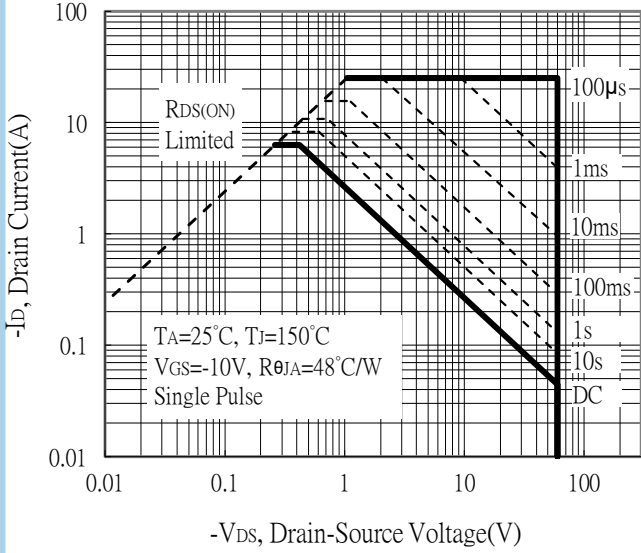
Typical Output Characteristics



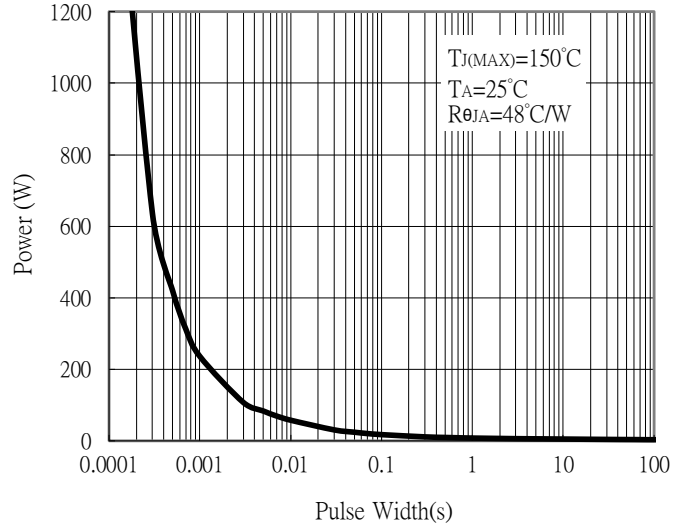
Gate Charge Characteristics



Maximum Safe Operating Area



Single Pulse Power Rating, Junction to Ambient



Transient Thermal Response Curves

