

N-Channel Enhancement Mode Power MOSFET

- Features**

$$V_{DS} = 60V,$$

$$I_D = 110A$$

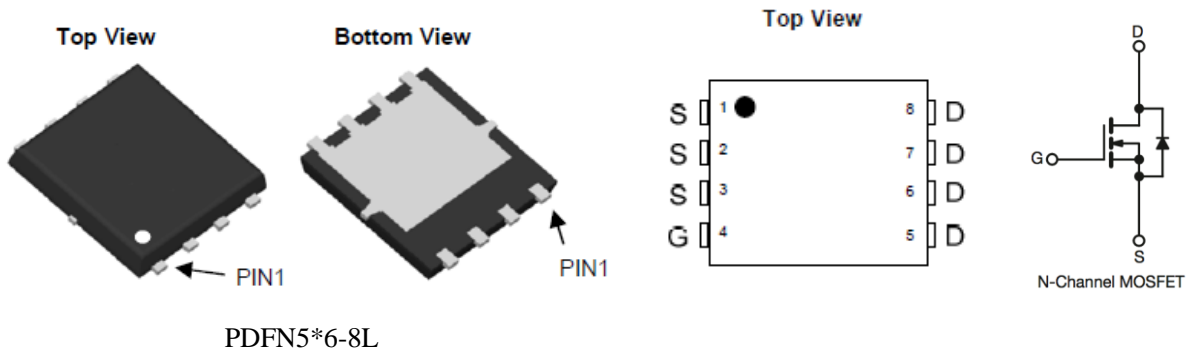
$$R_{DS(ON)} @ V_{GS} = 10V, \text{ TYP } 2.9m\Omega$$

$$R_{DS(ON)} @ V_{GS} = 4.5V, \text{ TYP } 4.1m\Omega$$

- General Description**

- Notebook AC-in load switch
- Battery protection charge/discharge

- Pin Configurations**



- Absolute Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise noted**

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current (Continuous) *AC	$T_C=25^\circ\text{C}$	I_D	110	A
	$T_C=70^\circ\text{C}$		88	
Drain Current (Pulse) *B		I_{DM}	200	A
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	83	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	$^\circ\text{C}$

- Thermal Resistance Ratings**

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	$t \leq 10 \text{ s}$	R_{thJA}	18	23	$^\circ\text{C/W}$
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	1	1.5	

● **Electrical Characteristics** @ $T_A=25^\circ\text{C}$ unless otherwise noted

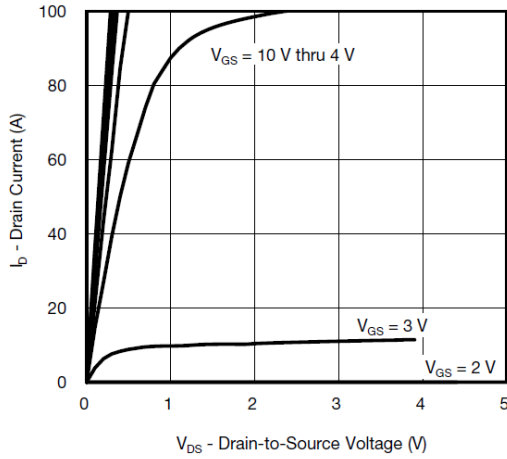
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	1.7	2.5	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	2.9	3.8	m Ω
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 20A$	--	4.1	5.4	m Ω
Diode Forward Voltage	V_{SD}	$I_{SD} = 1A, V_{GS} = 0V$	--	0.77	1.2	V
Diode Forward Current *AC	I_S	$T_C = 25^\circ\text{C}$	--	--	108	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$	--	58	--	nC
Gate-Source Charge	Q_{gs}		--	16	--	nC
Gate-Drain Charge	Q_{gd}		--	4	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V, R_G = 3\Omega, I_D = 20A, V_{GEN} = 10V$	--	18	--	ns
Turn-on Rise Time	t_r		--	8	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	50	--	ns
Turn-Off Fall Time	t_f		--	10.5	--	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1.0\text{MHz}$	--	3460	--	pF
Output Capacitance	C_{oss}		--	1520	--	pF
Reverse Transfer Capacitance	C_{rss}		--	22	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.

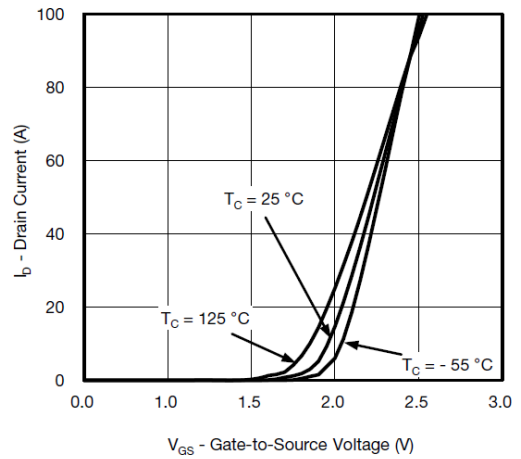
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the $\leq 10\text{s}$ junction to ambient thermal resistance rating.

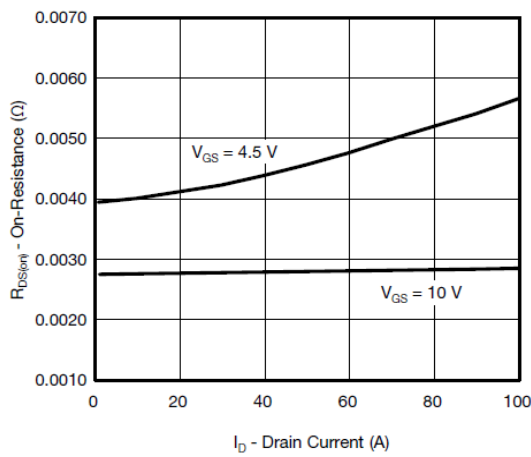
● Typical Performance Characteristics (($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted))



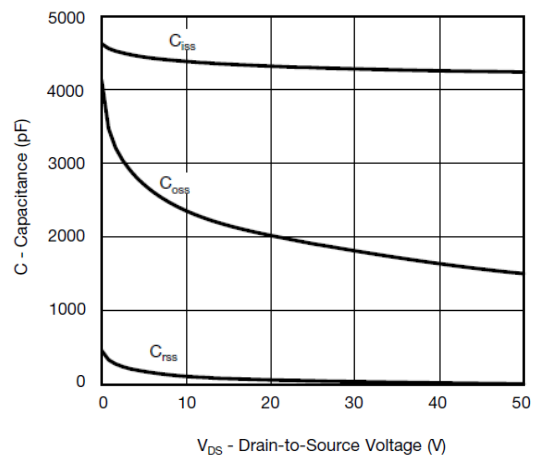
Output Characteristics



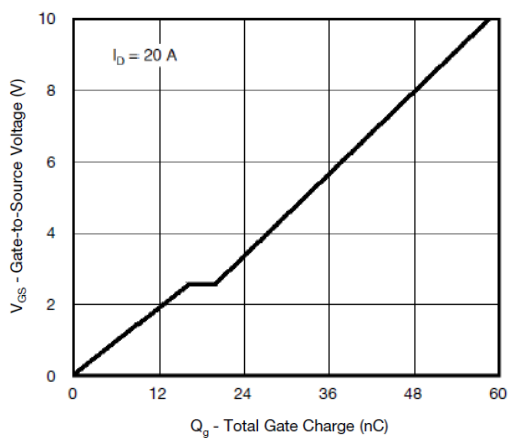
Transfer Characteristics



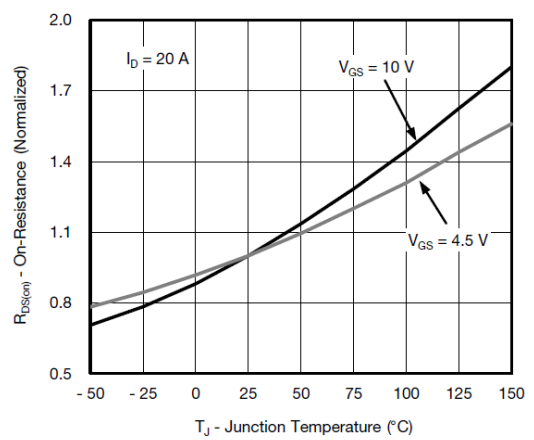
On-Resistance vs. Drain Current and Gate Voltage



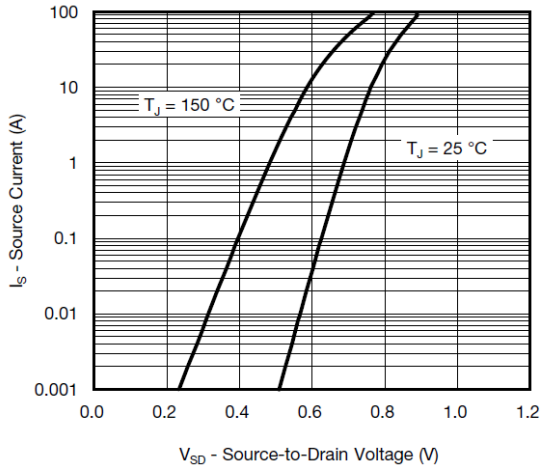
Capacitance



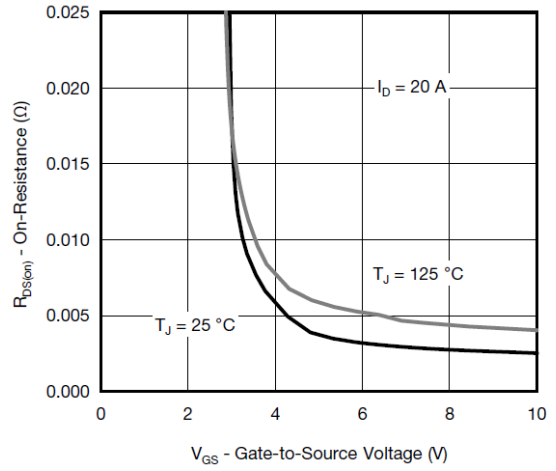
Gate Charge



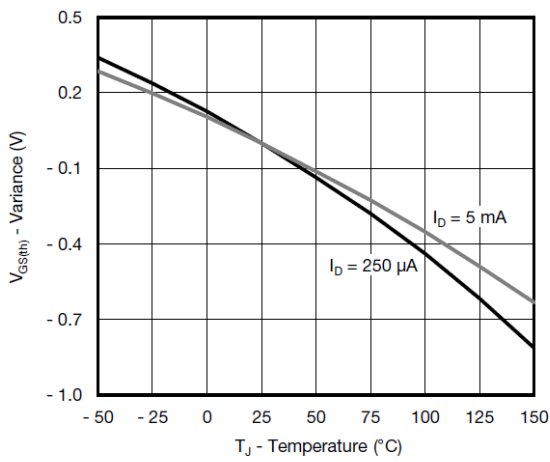
On-Resistance vs. Junction Temperature



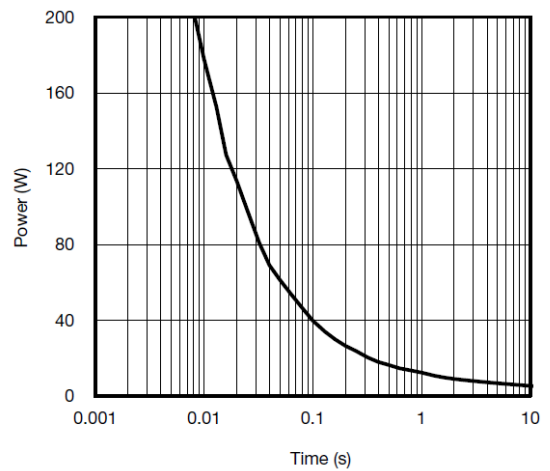
Source-Drain Diode Forward Voltage



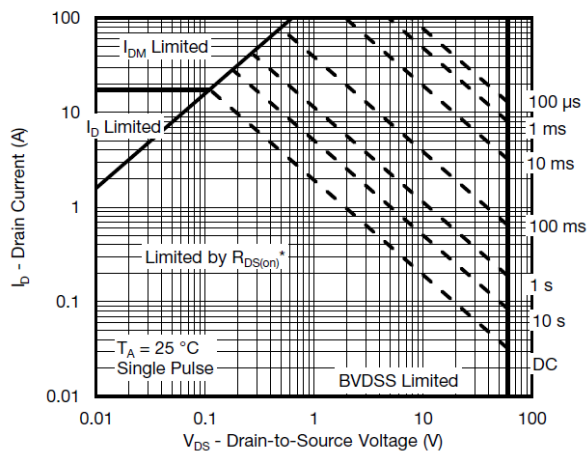
On-Resistance vs. Gate-to-Source Voltage



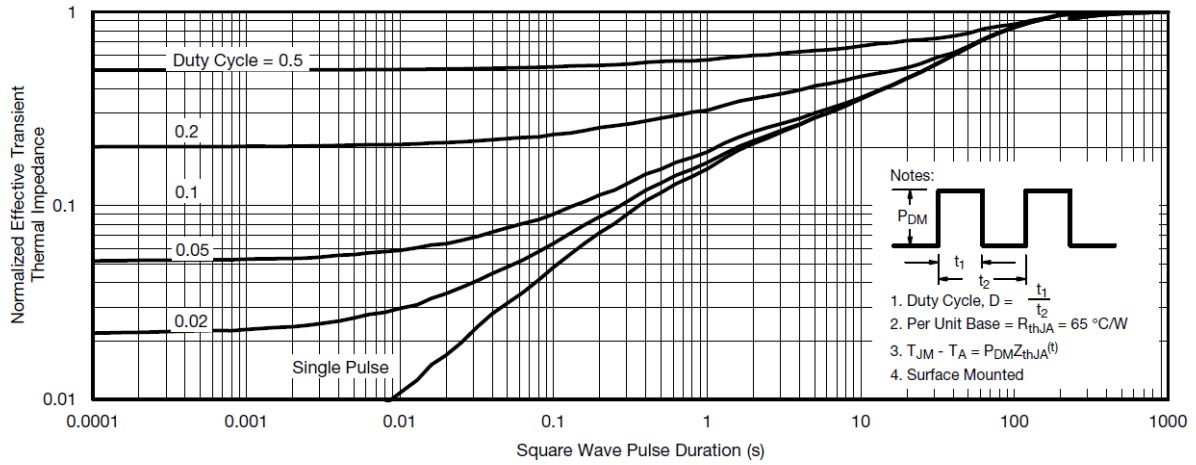
Threshold Voltage



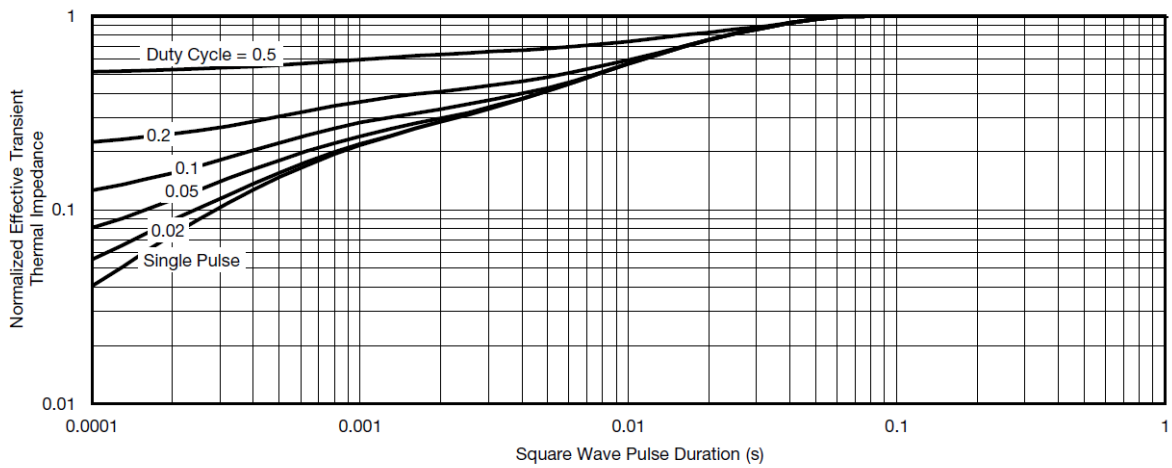
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient

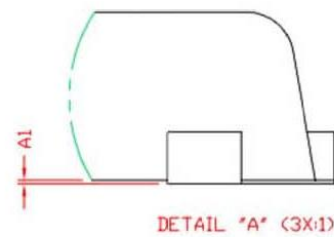
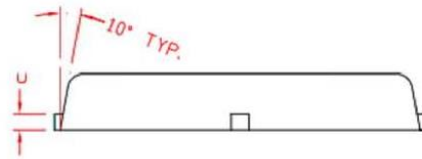
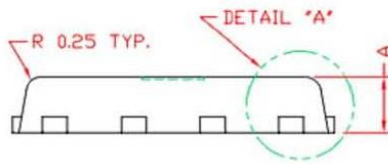
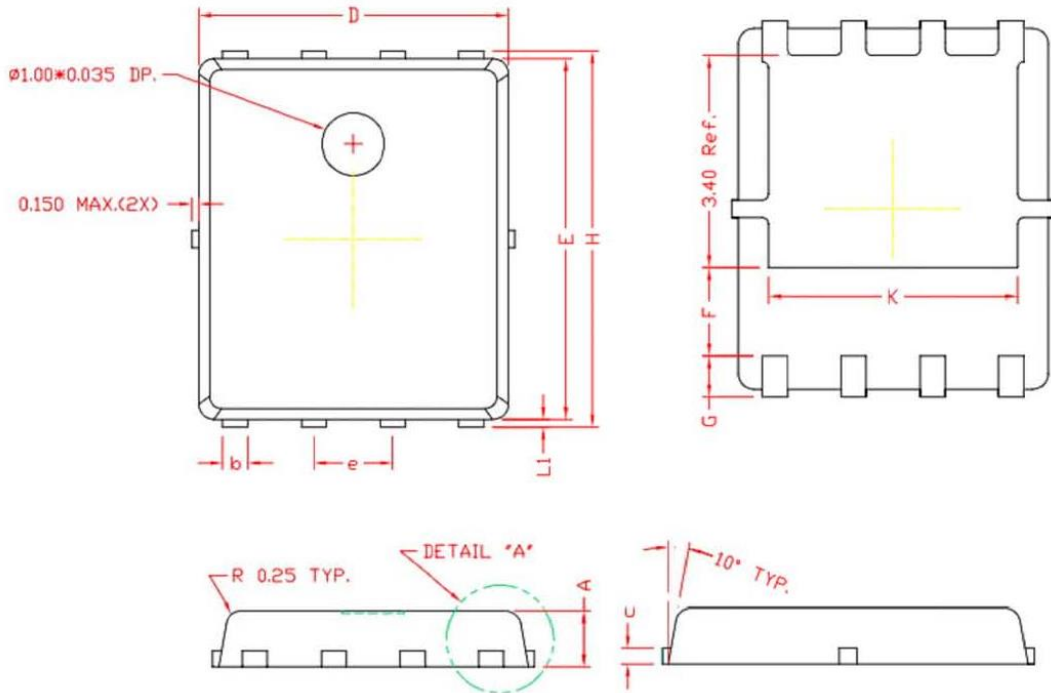


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

● Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.03	0.05
b	0.35	0.42	0.49
c	0.254 REF.		
D	4.90	5.00	5.10
F	1.40 REF.		
E	5.70	5.80	5.90
e	1.27 BSC.		
H	5.95	6.08	6.20
L1	0.10	0.14	0.18
G	0.60 REF.		
K	4.00 REF.		