

60V N-Channel Enhancement Mode MOSFET

V_{DS} = 60V

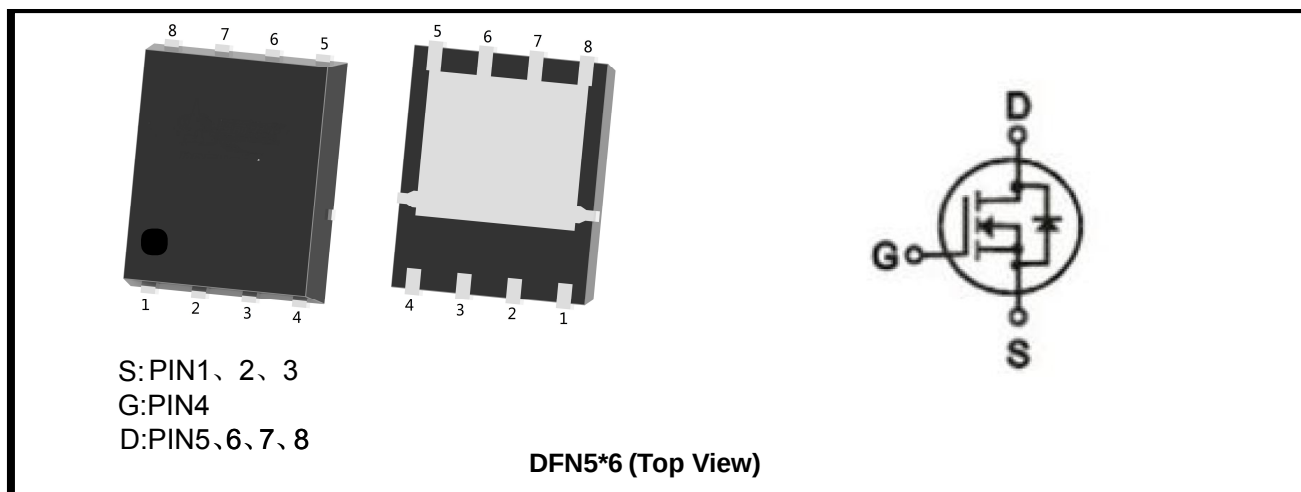
R_{DS(ON)}, V_{GS}@ 10.0V, I_{DS}@20.0A < 3.0mΩ

R_{DS(ON)}, V_{GS}@ 4.5V, I_{DS}@ 20.0A < 5.0mΩ

Features

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance



Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	60	V
Continuous Drain Current		I _D	85	A
Pulsed Drain Current		I _{DM}	245	A
Gate-Source Voltage		V _{GS}	±20	V
Power Dissipation		P _D (T _c =25°C)	78	W
Avalanche energy(L=0.5mH)		E _{AS}	2000	mJ
Avalanche Current(L=0.5mH)		I _{AS}	47	A
Junction and Storage Temperature Range		T _j , T _{stg}	-55 to 150	°C
Maximum Junction-to-Ambient	t ≤ 10s	R _{θJA}	20	°C/W
	Steady-State		50	
Maximum Junction-to-Case	Steady-State	R _{θJC}	1.6	

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A$, $V_{GS}=0V$	60	77		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V$, $V_{GS}=0V$			1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0V$, $V_{GS}= \pm 20V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=20A$		2.8	3	m Ω
		$V_{GS}=4.5V$, $I_D=20A$		3.8	5	
Diode Forward Voltage	V_{SD}	$I_S=1A$, $V_{GS}=0V$		0.64	1	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		3710		pF
Output Capacitance	C_{oss}			2100		
Reverse Transfer Capacitance	C_{rss}			230		
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		2.3		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V$, $V_{DS}=30V$, $I_D=20A$		51		nC
Total Gate Charge	$Q_{g(4.5V)}$			25		
Gate Source Charge	Q_{gs}			10		
Gate Drain Charge	Q_{gd}			8.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=30V$ $R_L=1.5\Omega$ $R_{GEN}=3\Omega$		11		ns
Turn-On Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			43		
Turn-Off Fall Time	t_f			2		

Electrical Characteristic Curve

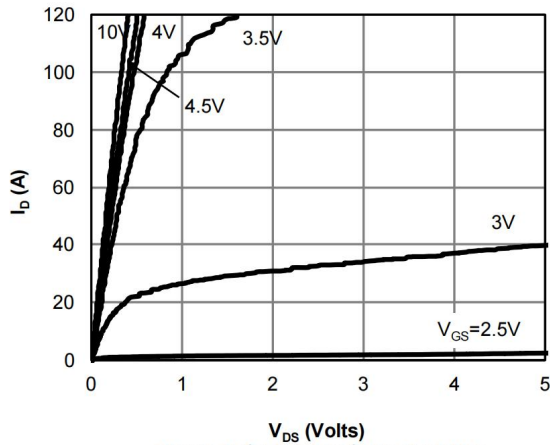


Figure 1: On-Region Characteristics

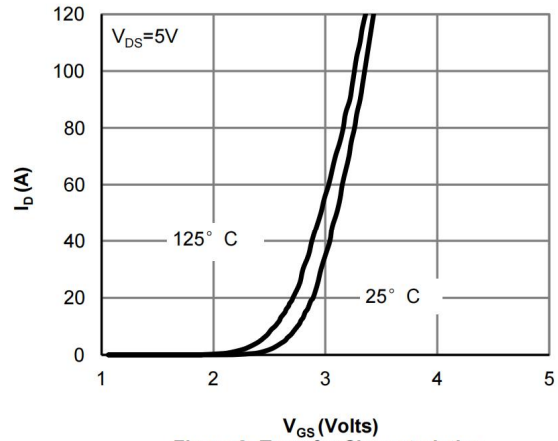


Figure 2: Transfer Characteristics

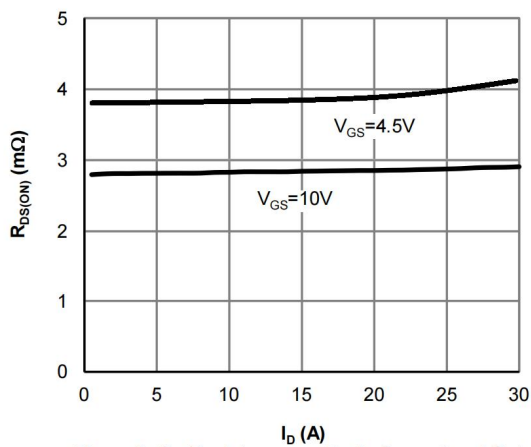


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

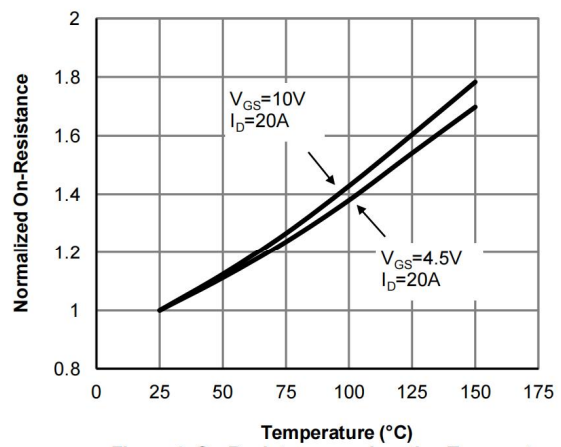


Figure 4: On-Resistance vs. Junction Temperature

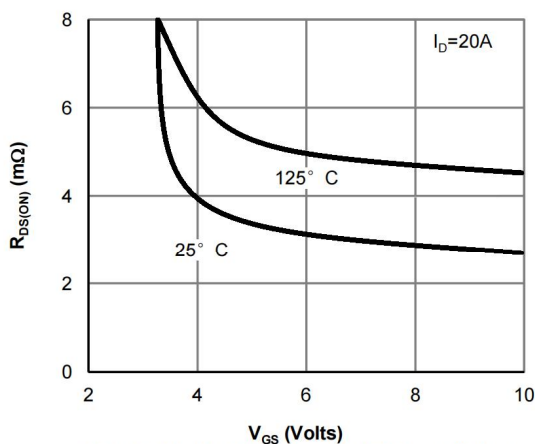


Figure 5: On-Resistance vs. Gate-Source Voltage

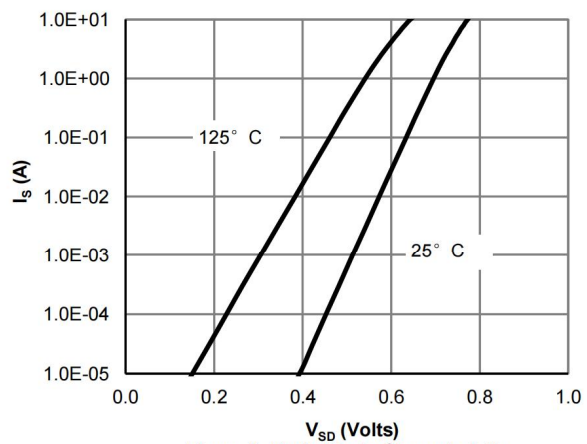


Figure 6: Body-Diode Characteristics

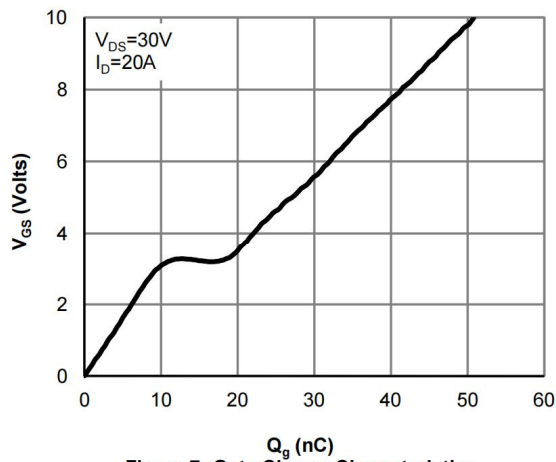


Figure 7: Gate-Charge Characteristics

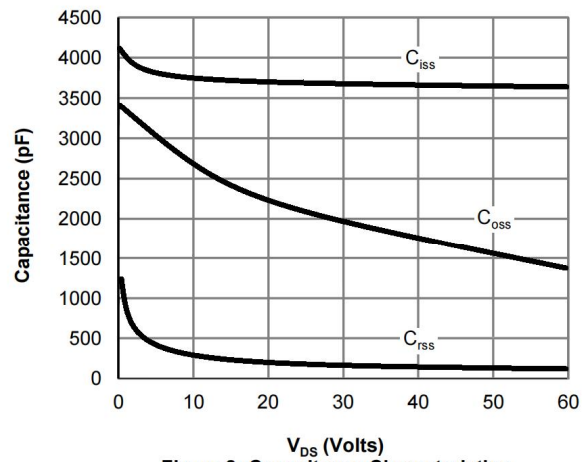


Figure 8: Capacitance Characteristics

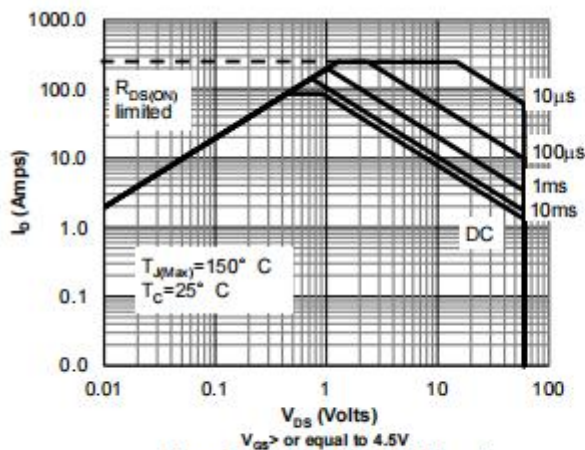


Figure 9: Maximum Forward Biased Safe Operating Area

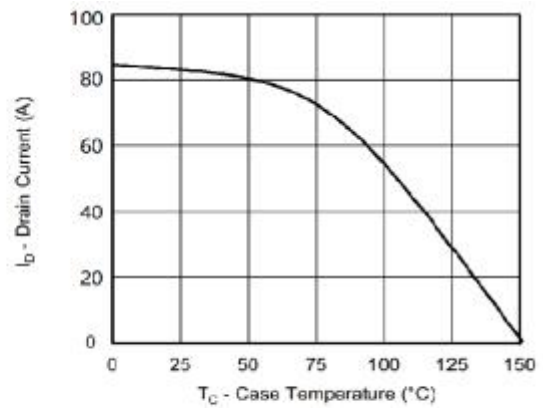


Figure 10: Maximum Continuous Drain Current vs Case Temperature

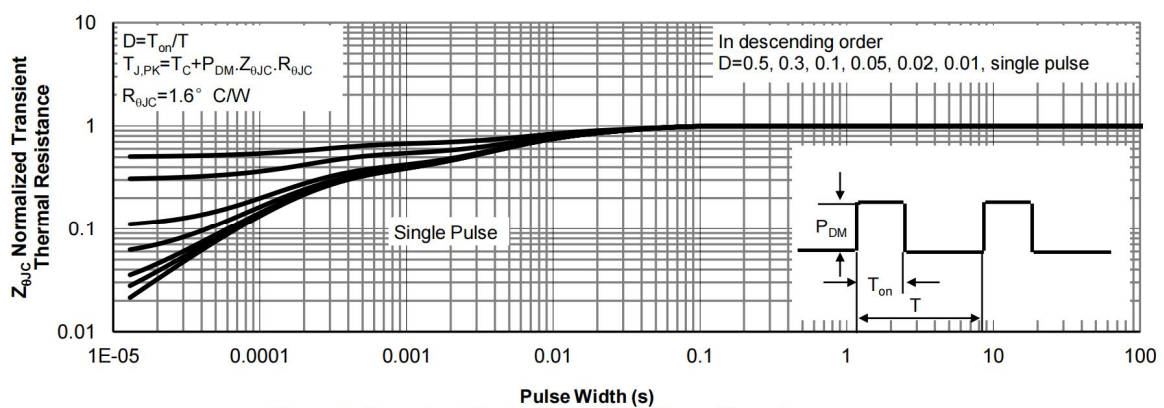
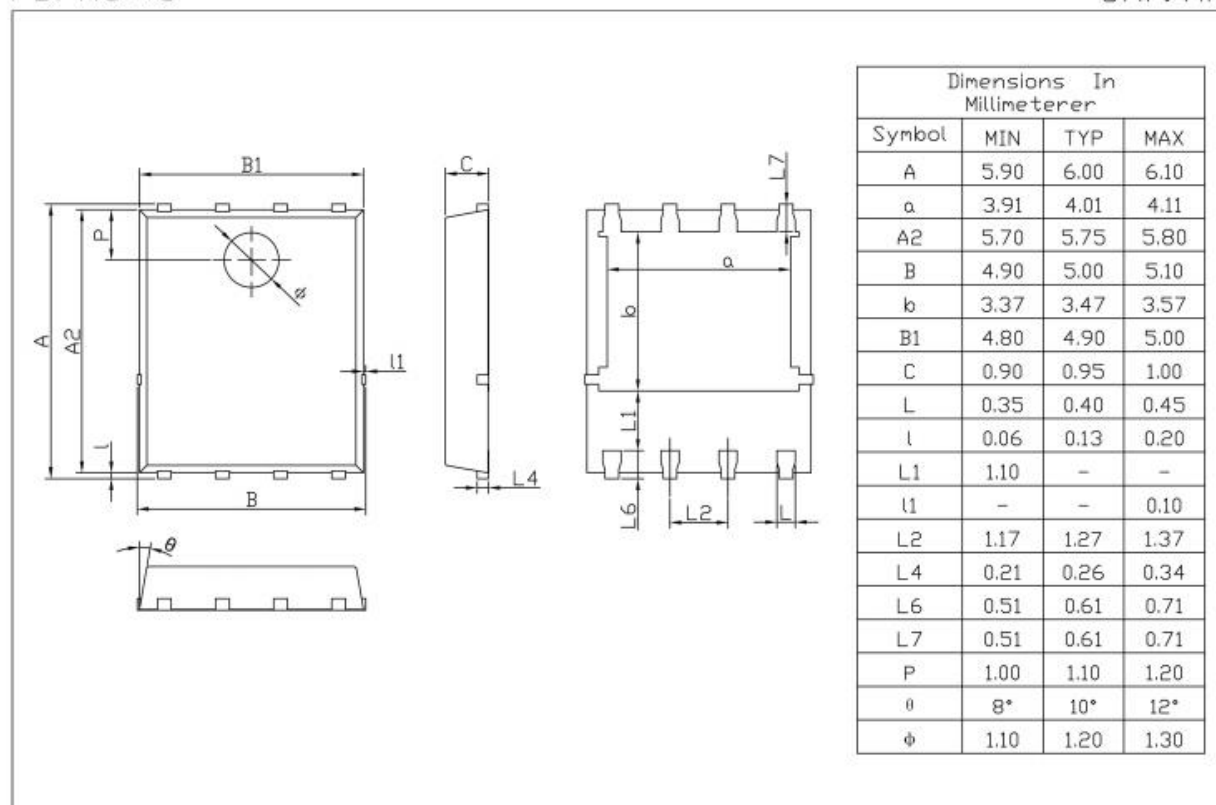


Figure 11: Normalized Maximum Transient Thermal Impedance

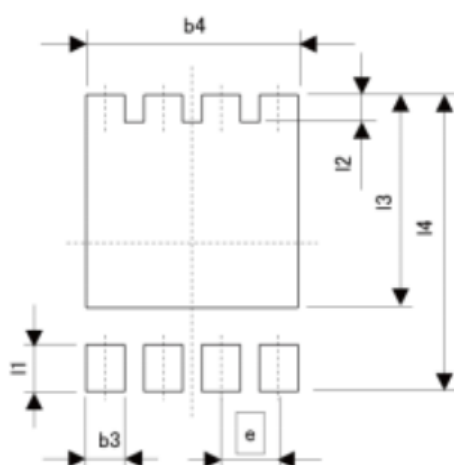
Dimension outline Unit:mm

PDFN5 X6

Unit:mm



Suggested Pad Layout



DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b3	-	0.68	-	0.027
b4	-	4.06	-	0.160
l1	-	0.81	-	0.032
l2	-	0.71	-	0.028
l3	-	4.49	-	0.177
l4	-	6.20	-	0.244