

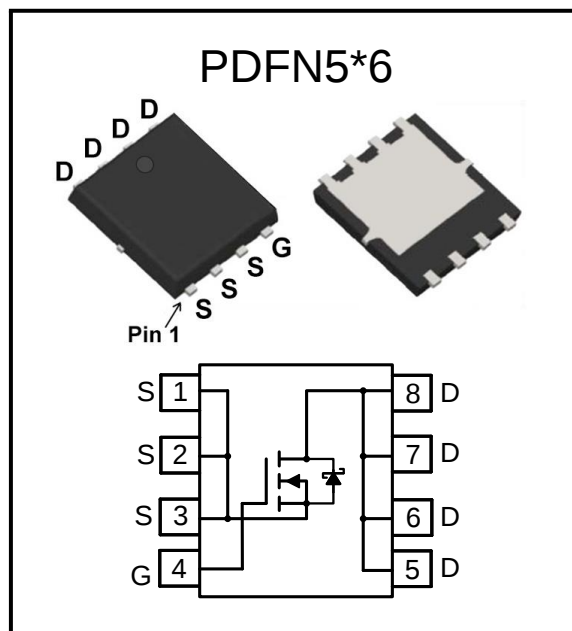
Features

- $V_{DS}=40V$
- $I_D=60A$
- $R_{DS(ON)} @ V_{GS}=10V, TYP=6.0m\Omega$
- $R_{DS(ON)} @ V_{GS}=4.5V, TYP=9m\Omega$

General Description

- Low $R_{DS(ON)}$
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Package



Application

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Absolute Maximum Ratings ($T_J=25^\circ C$ unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-Source Voltage		40	V
V_{GS}	Gate-Source Voltage		± 20	V
I_D	Drain Current	$T_C=25^\circ C$	60	A
		$T_C=100^\circ C$	38	
I_{DM}	Drain Current-Pulse		240	A
E_{AS}	Single Pulsed Avalanche Energy		50	mJ
P_D	Power Dissipation ⁽⁴⁾	$T_C=25^\circ C$	48	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		35	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance From Junction to Case		2.6	$^\circ C/W$
T_J	Junction Temperature		-55 to +150	$^\circ C$
T_{stg}	Storage Temperature Range		-55 to +150	$^\circ C$



Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250uA	40	—	—	V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} =250uA	1.1	1.5	2.2	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} =0V	—	—	1	uA
Gate- Source Leakage Current,Forward	I _{GSSF}	V _{GS} = +20V, V _{DS} =0V	—	—	100	nA
Gate- Source Leakage Current,Reverse	I _{GSSR}	V _{GS} = -20V, V _{DS} =0V	—	—	-100	
Static Drain-source On Resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A	—	6.0	7.7	mΩ
		V _{GS} =4.5V, I _D =10A	—	9.0	12	
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =20A	—	17	—	S
Input capacitance	C _{iss}	V _{DS} = 20V, V _{GS} =0V, f = 1MHz	—	648	—	pF
Output capacitance	C _{oss}		—	359	—	
Reverse transfer capacitance	C _{rss}		—	19	—	
Turn-on delay time	T _{d(on)}	V _{DS} =20V, V _{GS} =10V, I _D =20A, R _G =3Ω	—	8.0	—	nS
Turn-on Rise time	T _r		—	6.0	—	
Turn -Off Delay Time	T _{d(off)}		—	32	—	
Turn -Off Fall time	T _f		—	9	—	
Gate to Source Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A	—	11.5	—	nC
Gate to Drain Charge	Q _{gs}		—	2.1	—	
Gate to Drain Charge	Q _{gd}		—	2.2	—	
Max. Diode ForwardCurrent	I _S	—	—	—	50	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =10A,	—	—	1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt=500A/μs	—	26	—	nS
Reverse Recovery Charge	Q _{rr}		—	58	—	nC

Note:

- (1)The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- (2)The data tested by pulsed , pulse width≤300us , duty cycle≤2%.
- (3)The EAS data shows Max. rating . The test condition is VDD =20V, VGS=10V,L=0.5mH.
- (4)The power dissipation is limited by 150°C junction temperature.



Typical Performance Characteristics

Figure 1: Output Characteristics

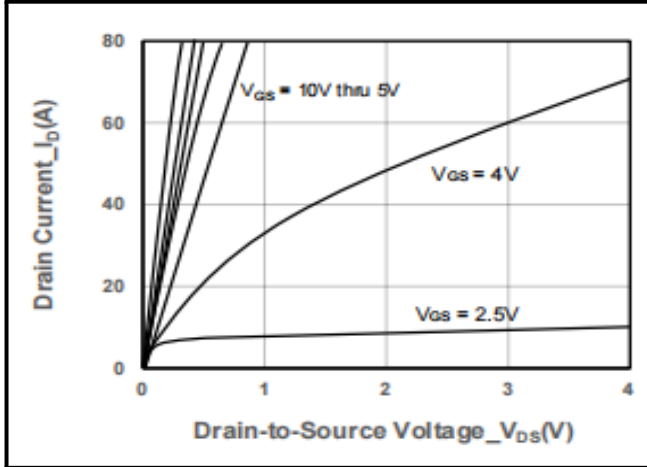


Figure 2: Transfer Characteristics

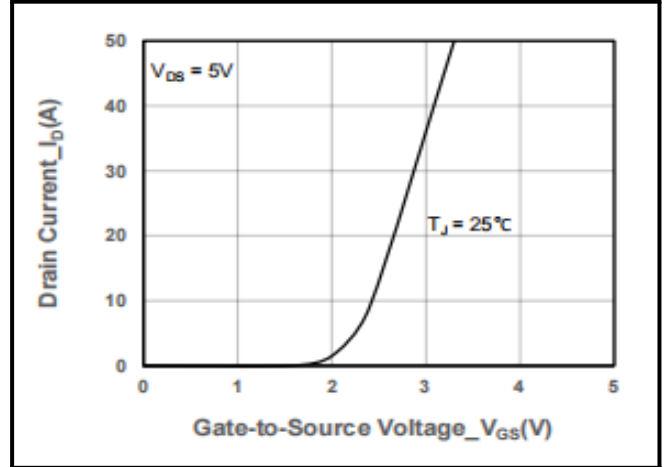


Figure 3: $R_{DS(on)}$ - Drain Current

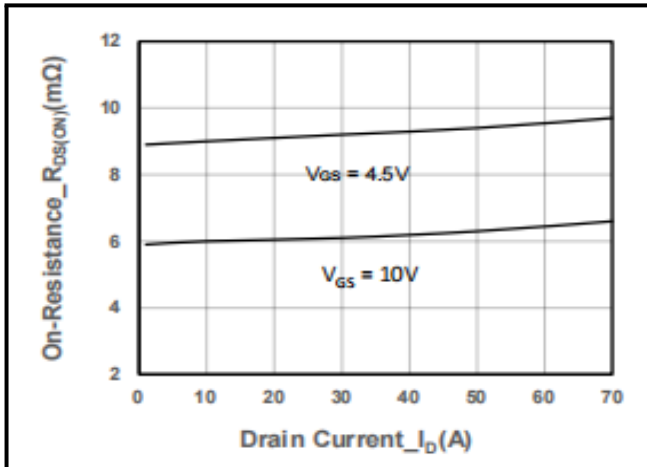


Figure 4: $R_{DS(on)}$ - Gate-Source Voltage

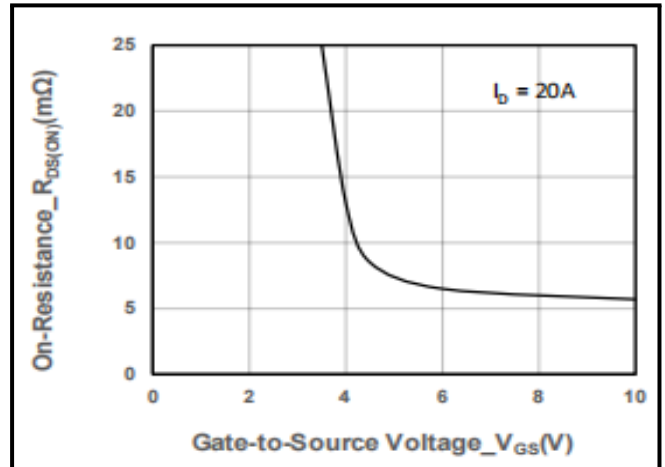


Figure 5: $R_{DS(on)}$ - Junction Temperature

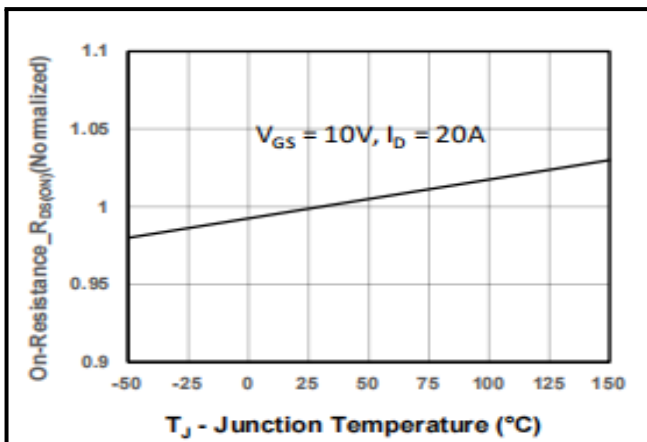
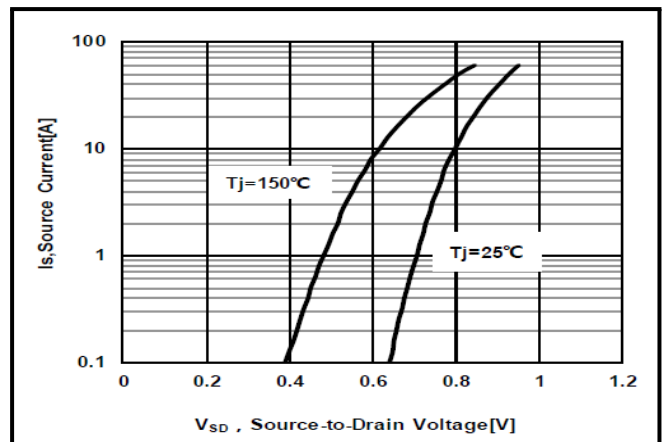


Figure 6: Source- Drain Diode Forward



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. T_J

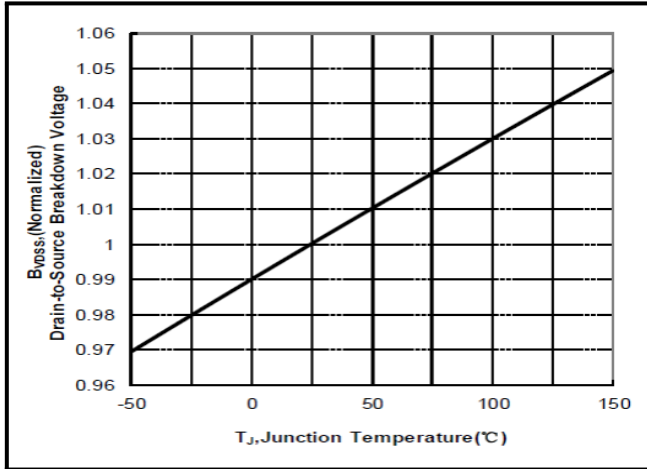


Figure 8: Gate Charge Characteristics

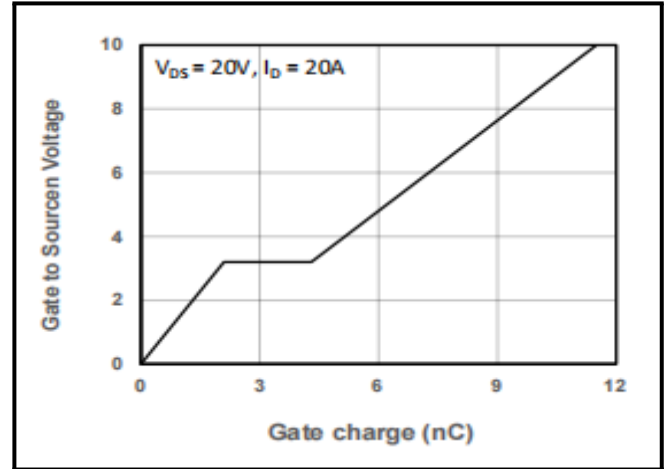


Figure 9: Capacitance vs V_{DS}

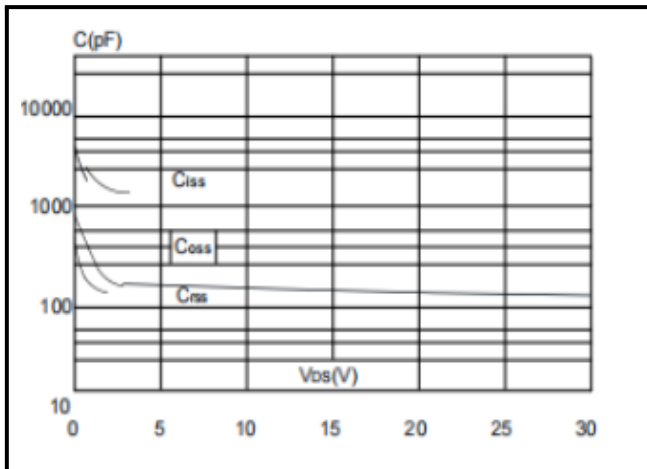


Figure 10: Safe Operation Area

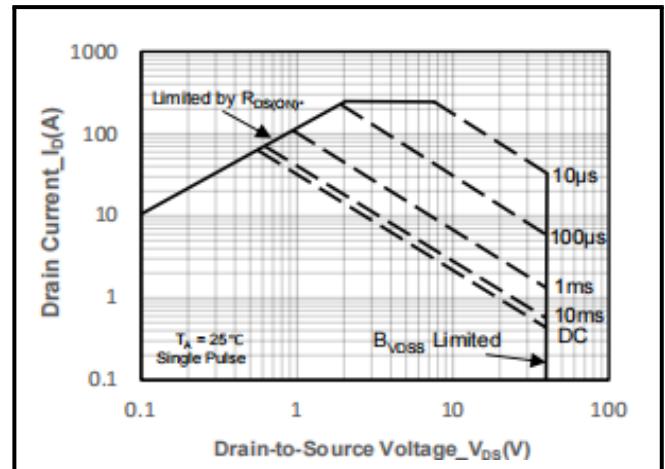


Figure 11: Power Dissipation Derating Curve

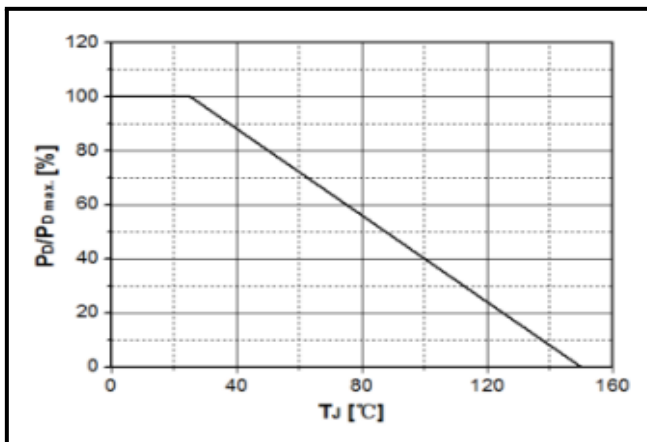
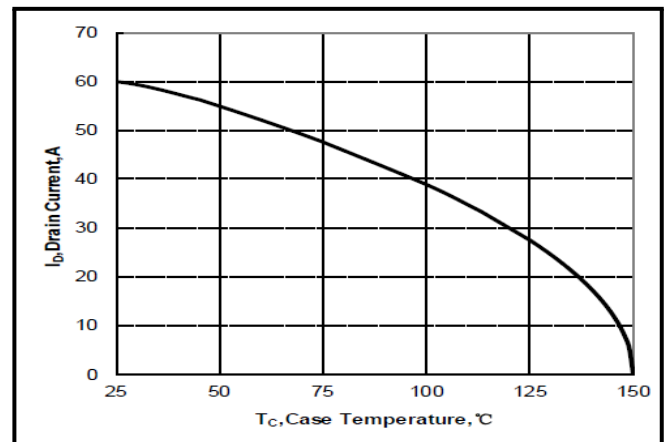
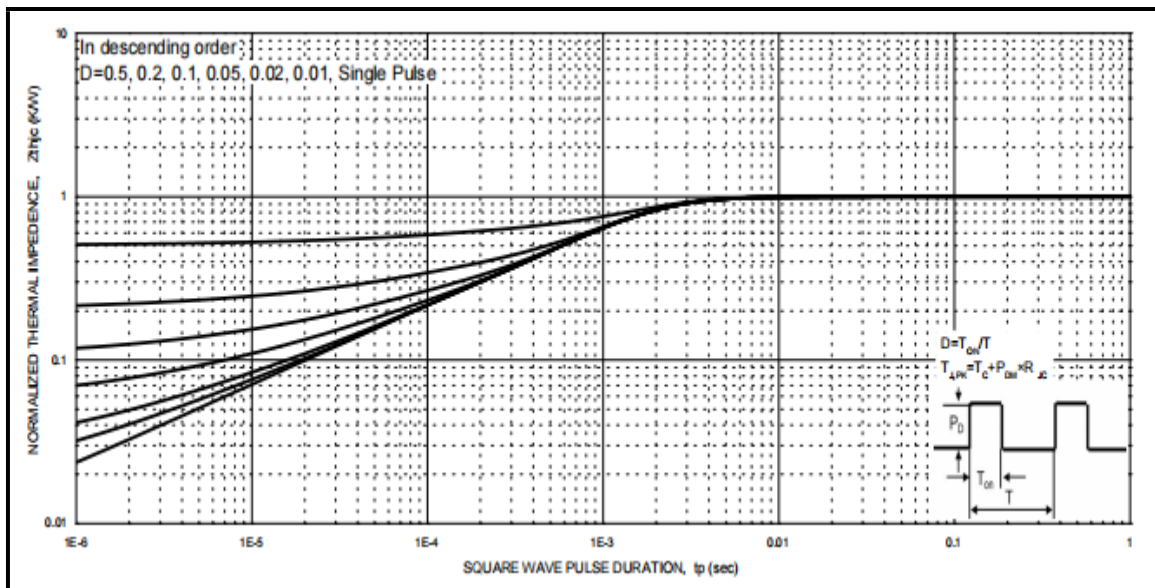


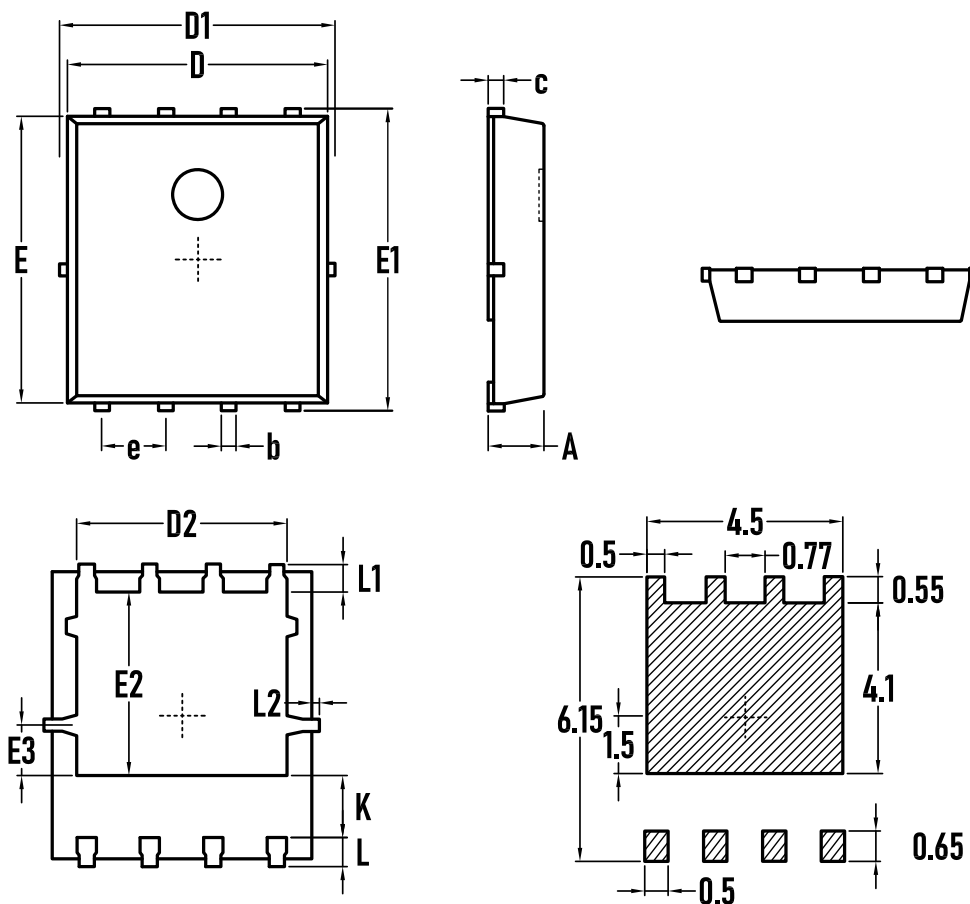
Figure 12: Current Derating



Typical Performance Characteristics

Figure 11: Normalized Maximum Transient Thermal Impedance





SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
b	0.25	0.35	0.50
C	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
e	—	1.27	—
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
K	1.00	1.30	1.50
L	0.40	0.55	0.70
L1	—	0.65	—
L2	—	—	0.15

