N-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY

BV_{DSS}	20V
$R_{DSON(MAX.)}$	0.0035Ω
I_D	100A

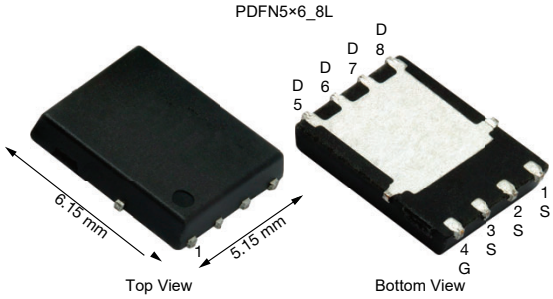
FEATURES

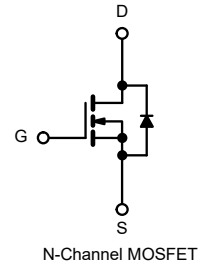
- DT-Trench Power MOSFET
- Excellent CdV/dt effect decline

RoHS COMPLIANT

APPLICATIONS

- OR-ing





Absolute Maximum Ratings (T_A = 25 °C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current@10V	T_C = 25 °C	I_D	100	A
	T_C = 100 °C		59	
Pulsed Drain Current		I_{DM}	360	A
Single Pulse Avalanche Energy	L = 0.1 mH	E_{AS}	118	mJ
Avalanche Current		I_{AS}	41	A
Total Power Dissipation	T_C = 25 °C	P_D	113.6	W
Operating Junction and Storage Temperature Range		T_J , T_{STG}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	TYP.	MAX.	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	-	1.1	°C / W

Electrical Characteristics T_J = 25°C, unless otherwise noted

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V , I_D = 250 μA	20	-	-	V
Gate-body Leakage current	I_{GSS}	V_{DS} = 0 V , V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V , V_{GS} = 0 V , T_J = 25 °C	-	-	1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250 μA	0.4		1	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5 V , I_D = 30 A	-	0.0028	0.0035	Ω
		V_{GS} = 2.5 V , I_D = 20 A	-	0.0042	0.0052	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 10 V , V_{GS} = 0 V , f = 1 MHz	-	3202	-	pF
Output Capacitance	C_{oss}		-	462	-	
Reverse Transfer Capacitance	C_{rss}		-	447	-	
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 10 V , V_{GS} = 4.5 V , I_D = 30 A	-	50	-	nC
Gate-Source Charge	Q_{gs}		-	3.8	-	
Gate-Drain Charge	Q_{gd}		-	21	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V , I_D ≅ 30 A , V_{GEN} = 4.5 V , R_G = 1.8 Ω	-	10	20	nS
Rise Time	t_r		-	15	25	
Turn-Off Delay Time	$t_{d(off)}$		-	35	50	
Fall Time	t_f		-	20	30	
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S = 30 A , V_{GS} = 0 V	-	-	1.2	V
Continuous Source-Dranin Diode Current	I_S	T_J = 25 °C	-	-	100	A
Continuous Source Current	I_{SM}		-	-	360	A
Reverse Recovery Charge	Q_{rr}	T_J = 25 °C , I_F = 30 A , dI/dt = 100 A/μs	-	12	-	nC
Reverse Recovery Time	t_{rr}		-	25	-	ns

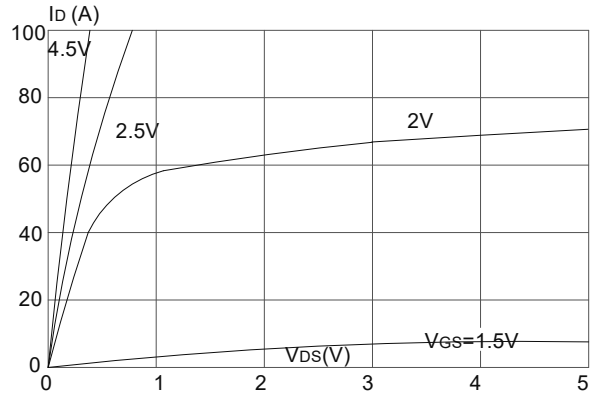
Notes:

a. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

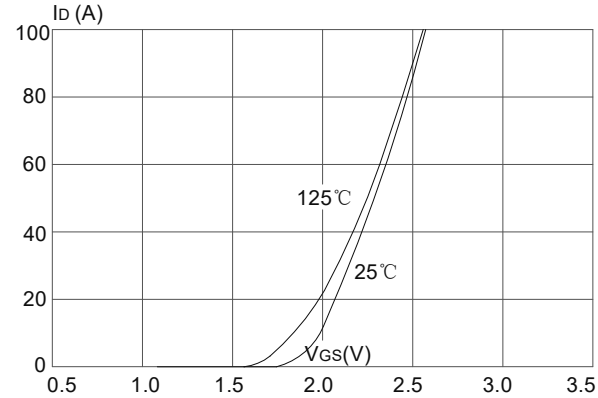
b. E_{AS} condition: T_J=25℃, VDD=15V, V_{GS}=4.5V, R_G=25Ω, L=0.5mH, I_{AS}=21A.

c. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

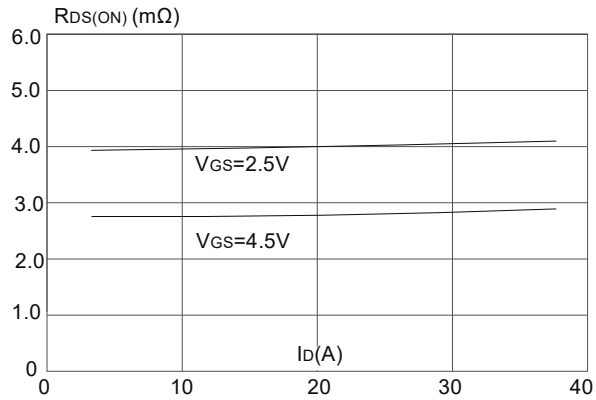
TYPICAL CHARACTERISTICS (25 °C unless noted)



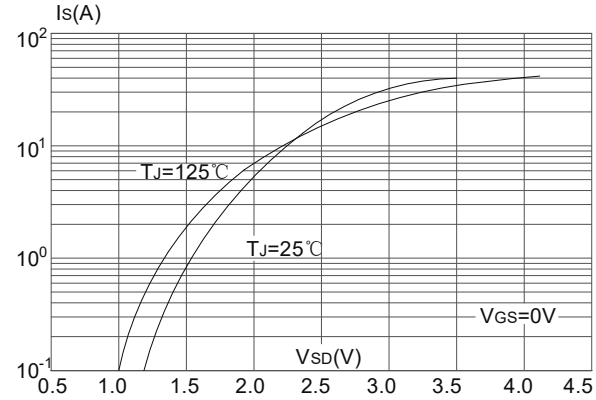
Output Characteristics



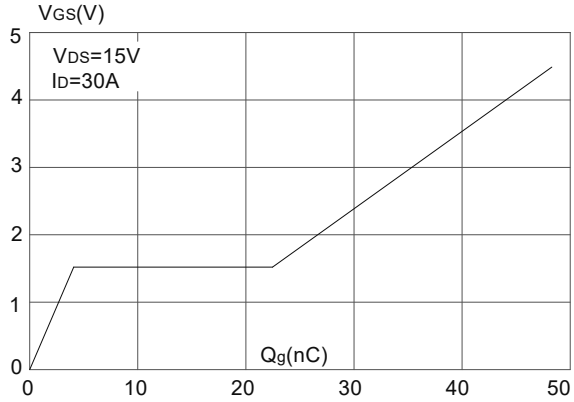
Typical Transfer Characteristics



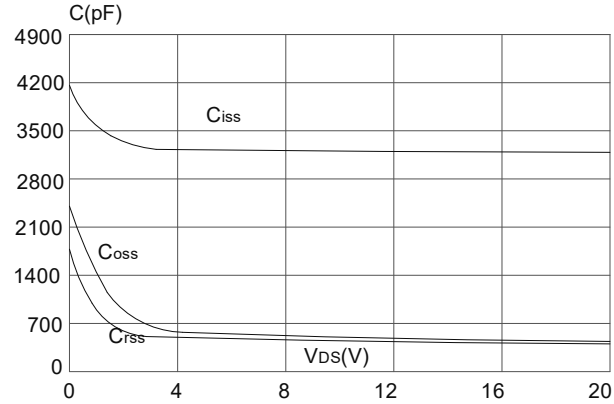
On-resistance vs. Drain Current



Body Diode Characteristics

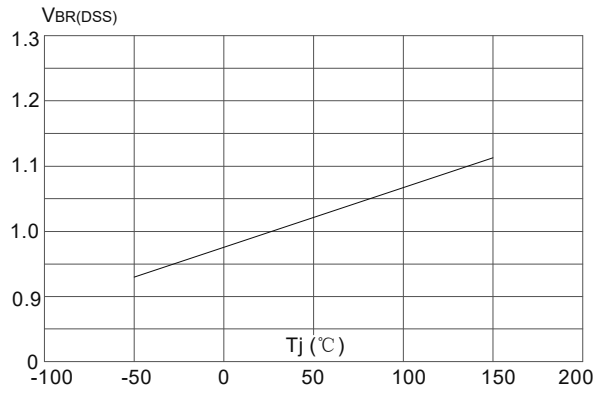


Gate Charge Characteristics

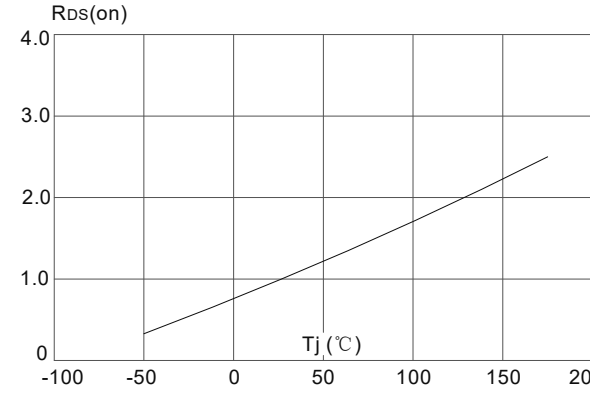


Capacitance Characteristics

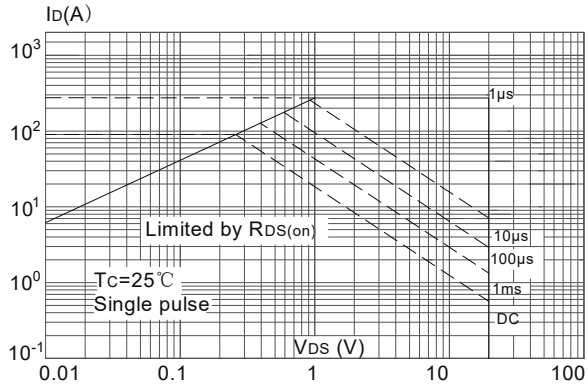
TYPICAL CHARACTERISTICS (25 °C unless noted)



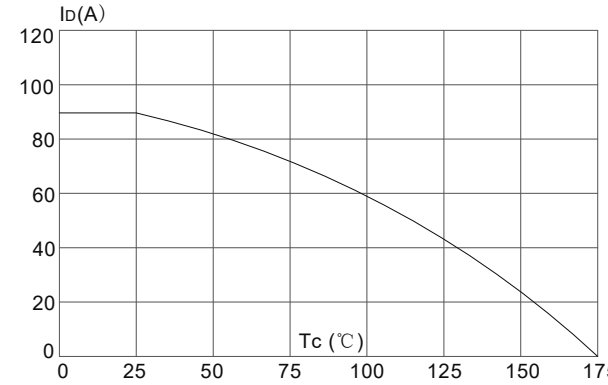
Normalized Breakdown Voltage vs. Junction Temperature



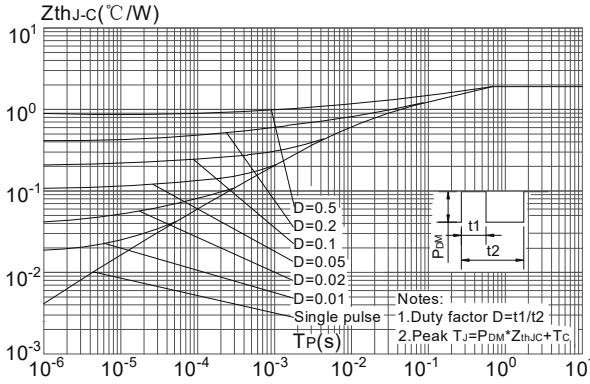
Normalized on Resistance vs.=Junction Temperature



Maximum Safe Operating Area

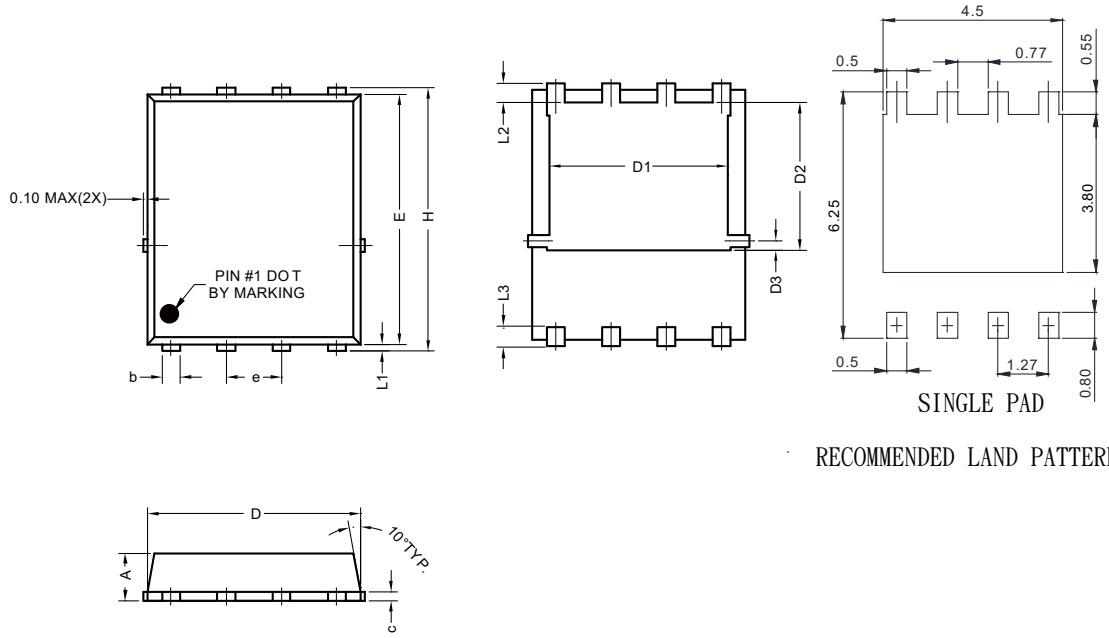


Maximum Continuous Drain Current=vs. Case Temperature



Maximum Effective Transient=Thermal Impedance, Junction-to-Case

PDFN5×6-8L_EP1_P PACKGE OUTLIN



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.800	1.170	0.031	0.046
b	0.340	0.490	0.013	0.019
c	0.20	0.34	0.008	0.013
D	4.800	5.100	0.009	0.011
D1	3.800	4.200	0.150	0.165
D2	3.180	3.78	0.125	0.149
D3	0.150	0.360	0.006	0.142
E	5.650	5.900	0.222	0.232
e	1.270 TYP		0.050 TYP	
H	5.900	6.150	0.232	0.242
L1	0.050	0.250	0.002	0.010
L2	0.380	0.620	0.015	0.024
L3	0.380	0.75	0.015	0.030