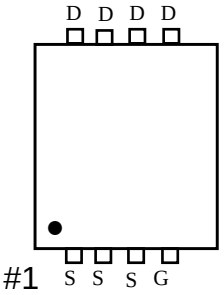
N-Channel High Density Trench MOSFET

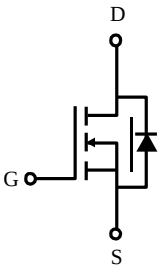
PDFN3x3

FEATURES

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



PRODUCT SUMMARY		
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	8.5mΩ	48A



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

PARAME TERS TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gata-Source voltage		V_{GS}	±20	V
Continuous Drain current	T_C = 25℃	I_D	48	A
	T_C = 100 ℃		30	
Puised Drain Current[1]		I_{DM}	192	
Avalanche Current		I_{AS}	20	
Avalanche Energy	L=0.1mH	E_{AS}	20	mJ
Power Dissipation	T_C = 25 ℃	P_D	36	W
	T_C = 100 ℃		14	
Operaing junction & Storege Temperature Range		T_S T_{stg}	-55 to 150	℃

THERMAL CHARACTERISTICS

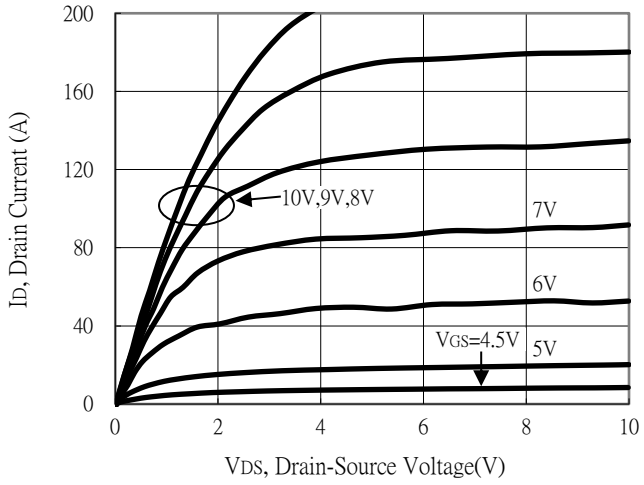
THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R_{9JC}		3.5	℃
Junction-to-Ambient	R_{9JA}		75	℃

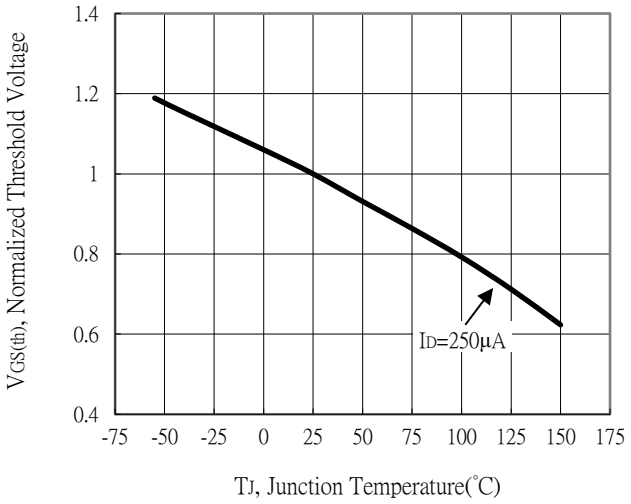
ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

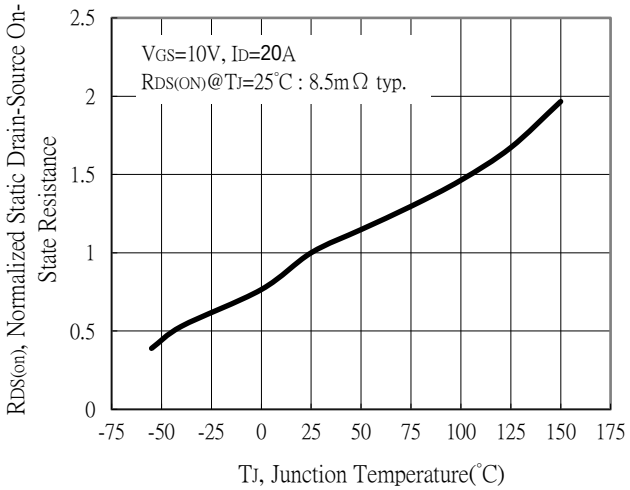
PARAMETER	SYNBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltege	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2	3	4	
Gate - Body Leakage	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Dain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0 V			1	μA
		V_{DS}=80V,V_{GS}=0V,T_J=125 ℃			30	
Drain - Source On - State Resistance[b]	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A		8.5	10	mΩ
		V_{GS}=6 V,I_D =20A		12	15.5	
Forward Trans conduct ance[1]	g_{fs}	V_{DS}=5V,I_D=10A		20		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=50V,f=1MHz		1560		pF
Output Capacitance	C_{oss}			525		
Reverse Transfer Capacitance	C_{rss}			55		
Gate Resistance	R_G	V_{GS}=0V,f=1MHz		0.9		Ω
Total Gate Charge[2]	$Q_{g(vgs=10V)}$	V_{DS}=50V$_{(BR)DSS}$, I_D = 20A		30.1		nC
	$Q_{g(vgs=6V)}$			20		
Gate Source Charge[2]	$Q_{gS(VGS=10V)}$			8.8		
	$Q_{gS(VGS=6V)}$			5.7		
Gate-Drain Charge[2]	$Q_{gd(VGS=10V)}$			8.8		
	$Q_{gd(VGS=6V)}$			5.5		
Tum-On Delay Time[2]	$t_{d(on)}$	V_{DS}=30V, I_D=20A,V_{GS}=10V.R_{GS}=6Ω		10.4		nS
Rise Time[2]	t_r			17.5		
Tum-Off Delay Time[2]	$t_{d(off)}$			26.5		
Fall Time[2]	t_r			68.9		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS(T_J=25℃)						
Continuous Current	I_S			36		A
Forward Voltage[1]	V_{SD}	I_F=I_S,V_{GS}=0V		0.85	1.2	V
Reverse Recovery Time	T_{rr}	I_F=20A,d_{1f}/d_t=100A/μs		51		nS
Reverse Recovery Charge	Q_{rr}			40		nC

Note
b. Pulse Test Pulse width ≤ 300usec , Duty Cycle ≤ 2% .
c. Independent of operating production testing .

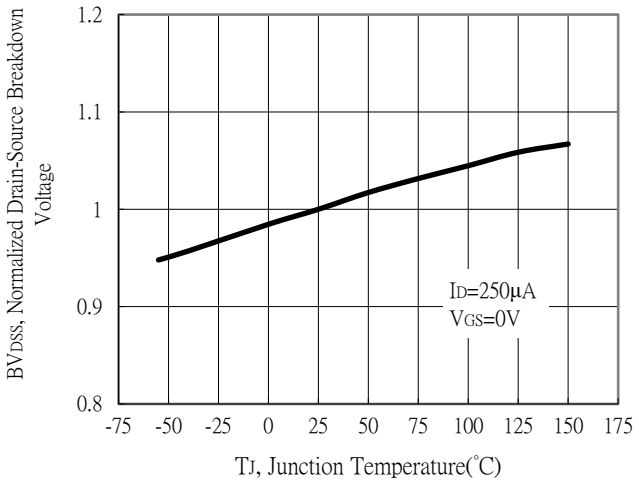
Typical Output Characteristics

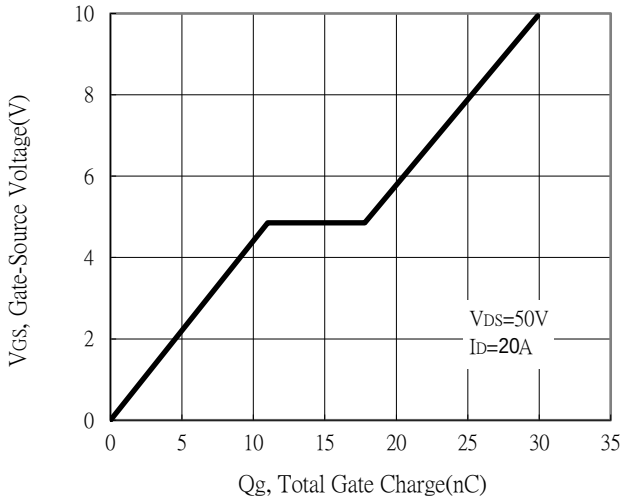


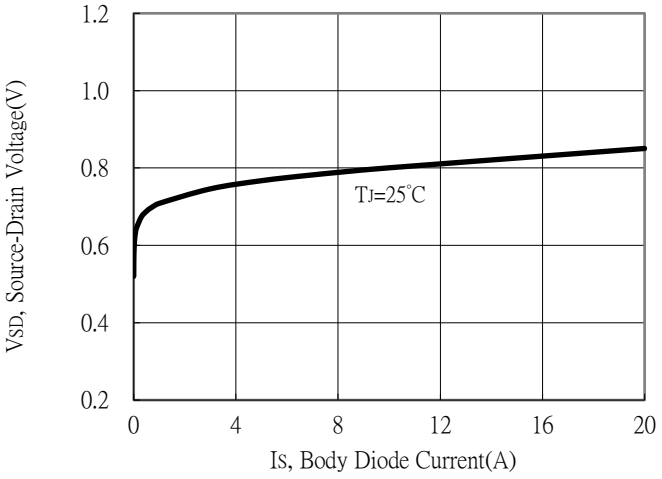




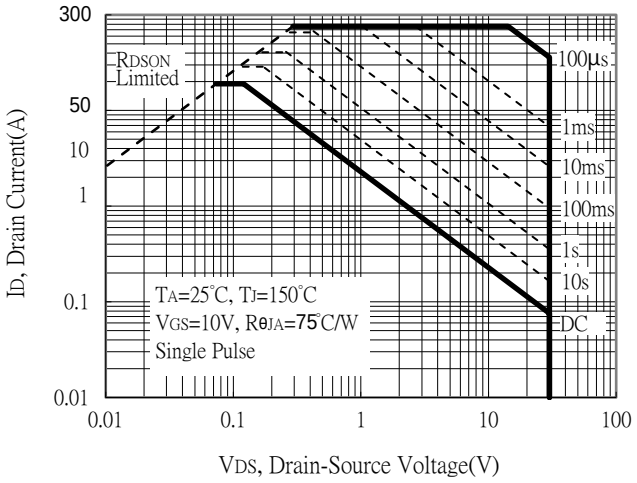
Breakdown Voltage vs Ambient Temperature



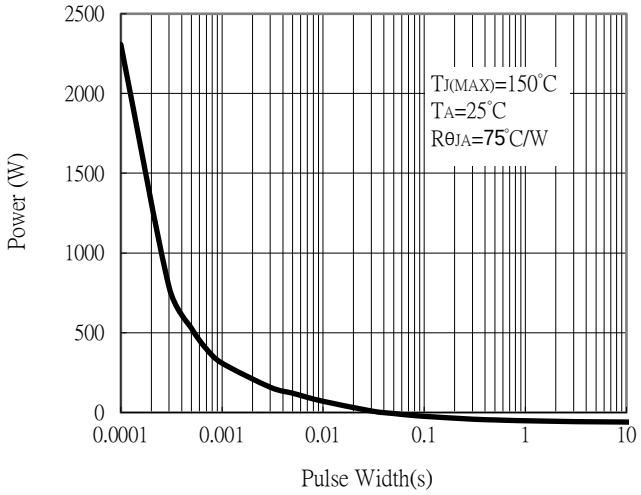




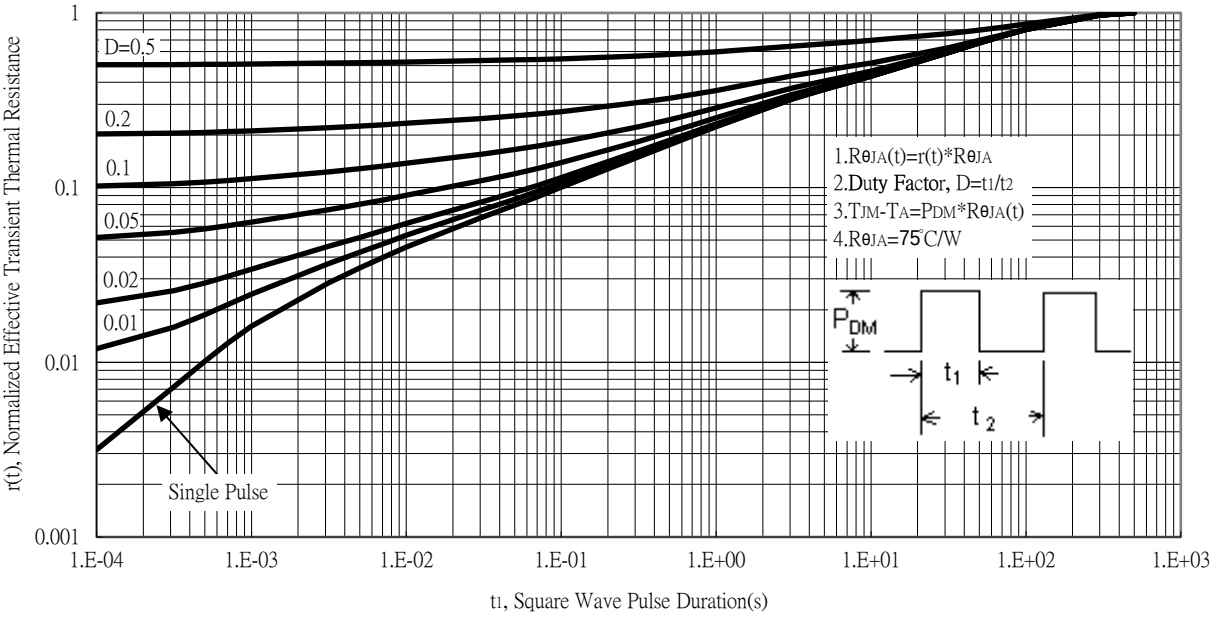
Maximum Safe Operating Area



Single Pulse Power Rating, Junction to Ambient



Transient Thermal Response Curves



Transient Thermal Response Curve