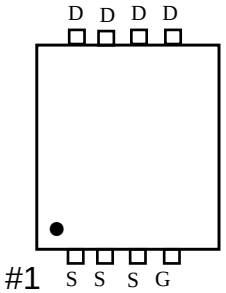
N-Channel High Density Trench MOSFET

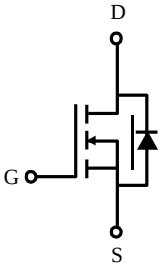
Features:

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



PDFN5x6

PRODUCT SUMMARY		
$V_{(BR)DSS}$	$R_{DS(ON)}$	ID
30V	3.9mΩ	72A



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_A = 25℃	I_D	72	A
	T_A = 100 ℃		50	
Puised Drain Current[1]		I_{DM}	136	
Avalanche Current		I_{AS}	32	
Avalanche Energy	L=0.1mH	E_{AS}	72	mJ
Power Dissipation	T_A = 25 ℃	P_D	32	W
			14	
Operaing junction & Storege Temperature Range		Ts Tstg	-55 to 150	℃

THERMAL CHARACTERISTICS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	R9Jc		4	℃
Junction-to-Ambient	R9JA		62	℃

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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	1.6	2.5	V
Gate-Body Leakage	I_{GSS}	V_{DS}=0V,V_{GS}=± V			±100	nA
Zero Gate Voltage Dain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0 V			1	μA
		V_{DS}=20V,V_{GS}=0V,T_J=125 ℃			30	μA
Drain-Source On- State Resistance[1]	$R_{DS(ON)}$	V_{GS}=4.5V,I_D=16A		5.1	7.2	mΩ
		V_{GS}=10V,I_D=20A		3.9	6	mΩ
Forward Trans conductance[1]	g_{fs}	V_{DS}=5V,I_D=13A		22		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=15V,f=1MHz		1860		pF
Output Capacitance	C_{oss}			260		pF
Reverse Transfer Capacitance	C_{rss}			212		pF
Gate Resistance	R_G	V_{GS}=0V,f=1MHz		2.2		Ω
Total Gate Charge[2]	$Q_{g(vgs=10V)}$	V_{DS}=0.5$V_{(BR)DSS}$, I_D = A		48		nC
	$Q_{g(vgs=4.5V)}$			26		nC
Gate Source Charge[2]	$Q_{gS(VGS=10V)}$			3.4		nC
	$Q_{gS(VGS=4.5V)}$			2.8		nC
Gate-Drain Charge[2]	$Q_{gd(VGS=10V)}$			14		nC
	$Q_{gd(VGS=4.5V)}$			9		nC
Tum-On Delay Time[2]	$t_{d(on)}$	V_{DS}=15V,R_L=1.5Ω I_D=20A,V_{GS}=10V.R_{GS}=6Ω		9.6		nS
Rise Time[2]	t_r			23.4		nS
Tum-Off Delay Time[2]	$t_{d(off)}$			62.8		nS
Fall Time[2]	t_r			23		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS(T_J=25℃)						
Continuous Current	I_S			38		A
Forward Voltage[1]	V_{SD}	I_F=I_S,V_{GS}=0V		0.75	1.1	V
Reverse Recovery Time	T_{rr}	I_F=20V,d_{1f}/d_t=100A/μs		18.2		nS
Reverse Recovery Charge	Q_{rr}			9.2		nC

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

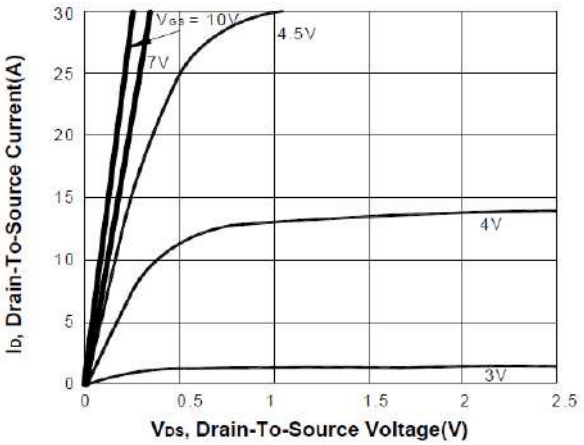


Figure 1. Output Characteristics

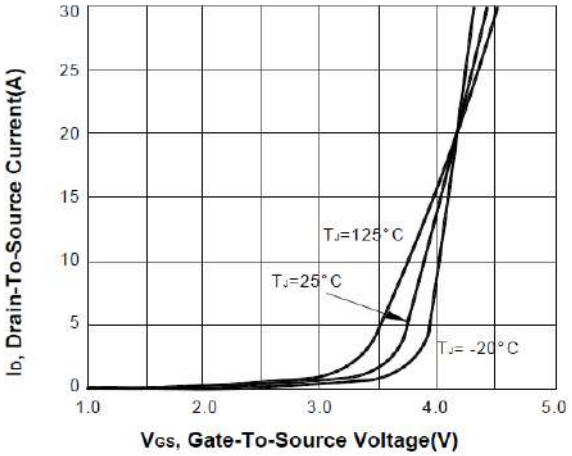


Figure 2 **Transfer Characteristics**

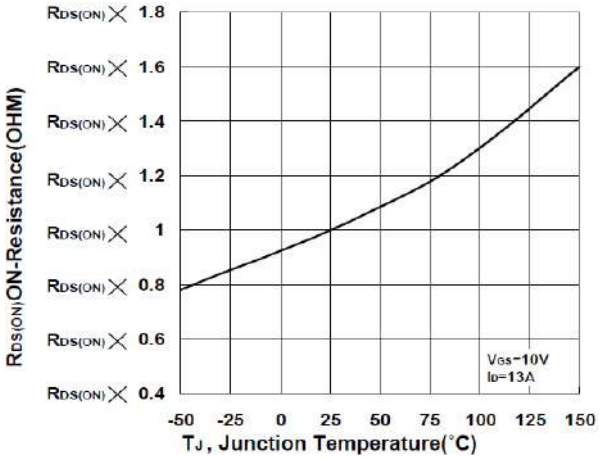


Figure 3.
On-Resistance VS Temperature

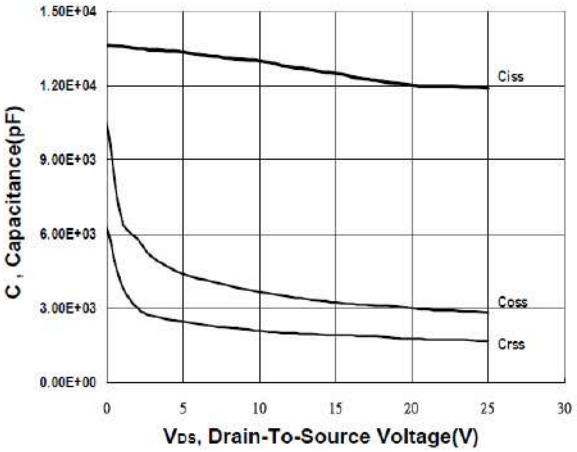


Figure 4. **Capacitance Characteristic**

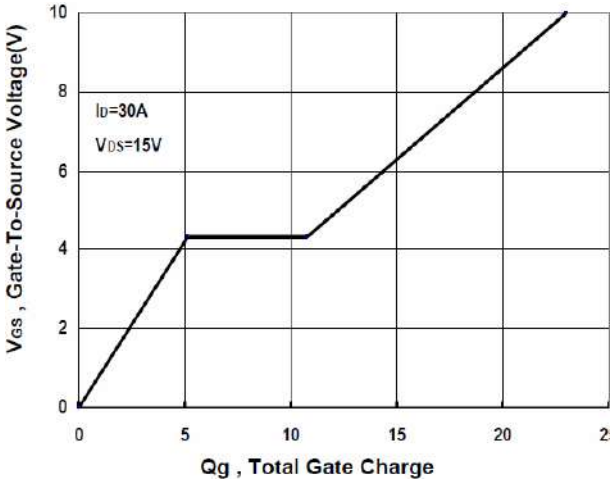


Figure 5. **Gate charge Characteristics**

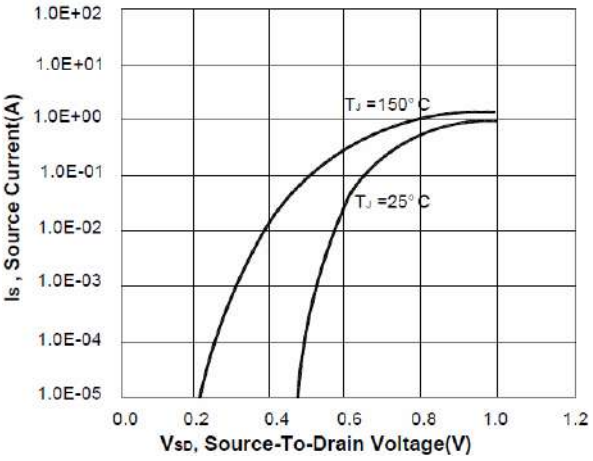


Figure 6. **Source-Drain Diode Forward Voltage**

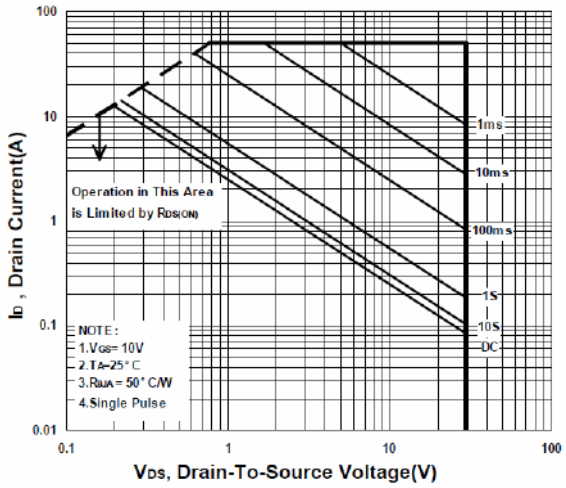


Figure 7. **Safe Operating Area**

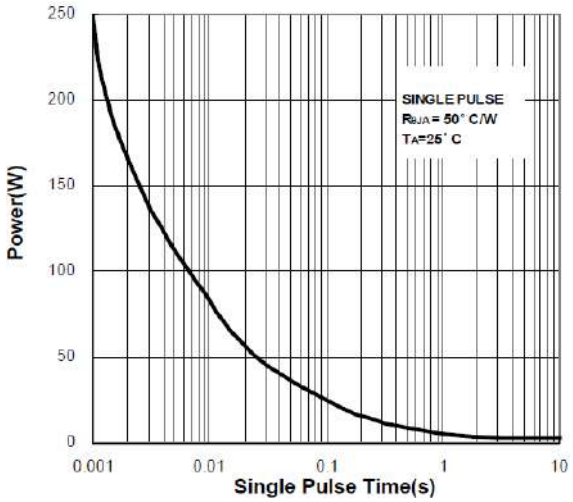


Figure 8 **Single Pulse Maximum Power Dissipation**

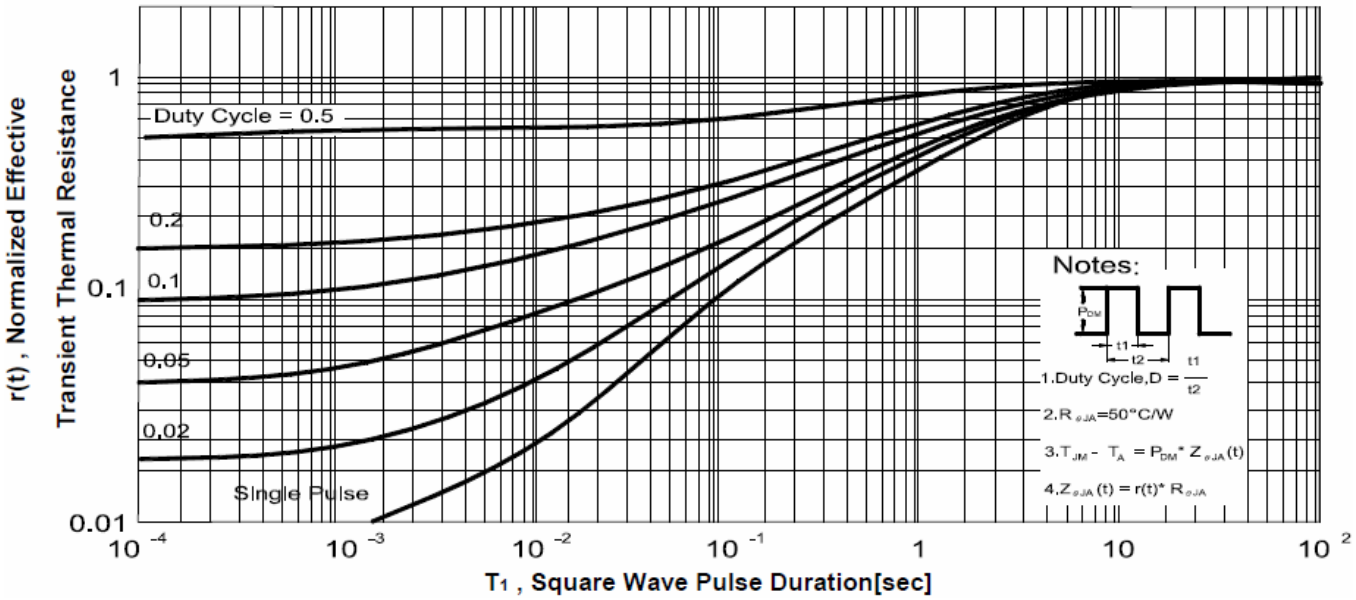


Figure 9. **Transient Thermal Response Curve**