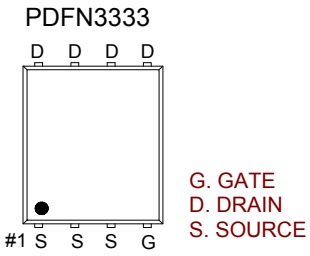
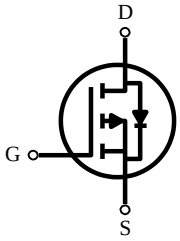
P -Channel High Density Trench MOSFET

FEATURES

- Super high dense cell trench design for low RDS(on).
- Rugged and reliable.
- Surface Mount package.



PRODUCT SUMMARY		
$V_{(BR)DSS}$	$R_{DS(on)}$ (mΩ) Max	I_D
-30V	12 @ V_{GS}= -10V	-38A
	16 @ V_{GS}= -4.5V	



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±25	V
Drain Current-Continuous	TC=25℃	I_D	-42	A
	TC=70℃		-28.5	
Pulsed Drain Current (Note 1)		I_{DM}	-120	
Avalanche Current		I_{AS}	-38	
Single Pulse Avalanche Energy	L = 0.1mH	E_{AS}	70	mJ
Maximum Power Dissipation (Note 1)	TA=25℃	P_D	4.1	W
	TA=70℃		2.6	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

TYPICAL THERMAL CHARACTERISTICS (Note 1)

Thermal Resistance,Junction-to-Case	R_{thJC}	2.5	°C/W
Thermal Resistance Junction-Ambient	R_{thJA}	62.5	°C/W

Note：

1. Pule width limited by maximum junction temperature.

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = -250uA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V , V_{GS} = 0V, Tj = 25℃			-1	uA
		V_{DS} = -24V , V_{GS} = 0V , Tj = 125℃			-30	
Gate-Body Leakage	I_{GSS}	V_{GS} = ±25V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = VGS , I_D = 250uA	-1	-1.4	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -10V , I_D = -12A		7.4	12	mΩ
		V_{GS} = -4.5V , I_D = -9A		9.8	16	mΩ
Forward Transconductance	gfs	V_{DS} = -10V , I_D = -12A		16		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} = -15V , V_{GS} = 0V f = 1.0MHz		2078		pF
Output Capacitance	C_{OSS}			203		pF
Reverse Transfer Capacitance	C_{RSS}			185		pF
Gate Resisance	Rg	V_{DS} = 0V , V_{GS} = 0V , f = 1.0MHz		6		Ω
SWITCHING CHARACTERISTICS (Note 3)						
Turn-On Delay Time	$td_{(ON)}$	V_{DD} = -15V , I_D = -1A , V_{GS} = -10V R_{GS}= 6 Ω		12.8		nS
Rise Time	tr			24.2		nS
Turn-Off Delay Time	$td_{(OFF)}$			72		nS
Fall Time	tf			33.1		nS
Total Gate Charge (10V)	Qg	V_{DS} = -15BVDSS , I_D = -12A V_{GS} = -10V		42		nC
Total Gate Charge (4.5V)	Qg			26.3		nC
Gate-Source Charge	Qgs			6.7		nC
Gate-Drain Charge	Qgd			8.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Continuous Current	I_S				-30	A
Diode Forward Voltage (Note 2)	V_{SD}	V_{GS} = 0V , I_S = I_F		-0.75	-1.2	V

Note：

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

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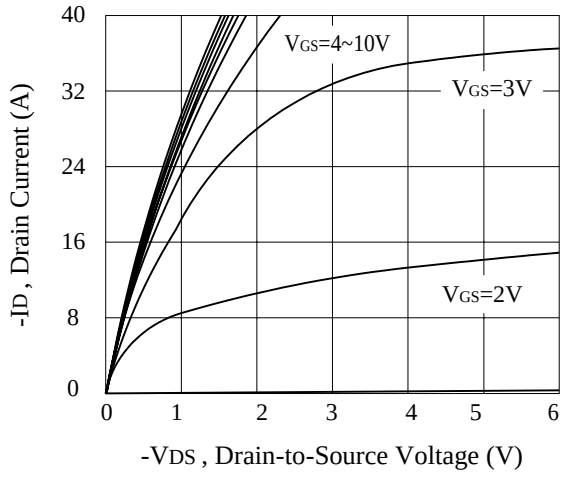

Figure 1. Output Characteristics

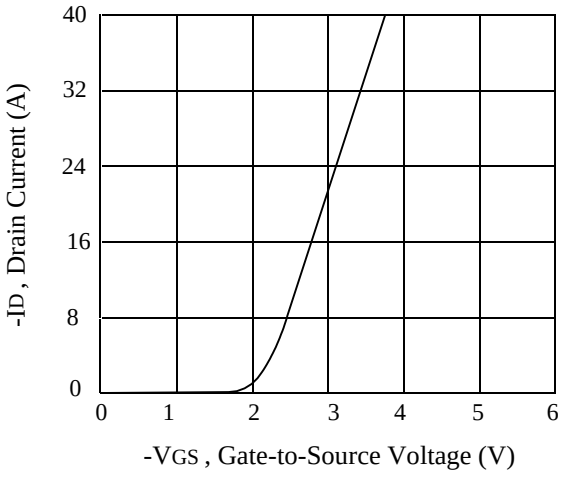

Figure 2. Transfer Characteristics

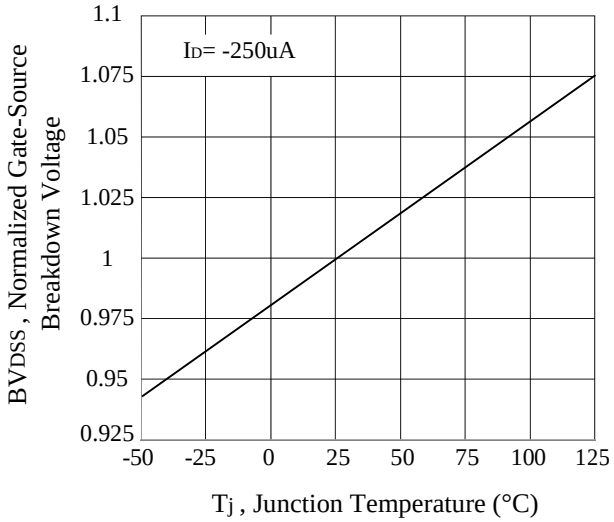

Figure 3. Breakdown Voltage Variation with Temperature

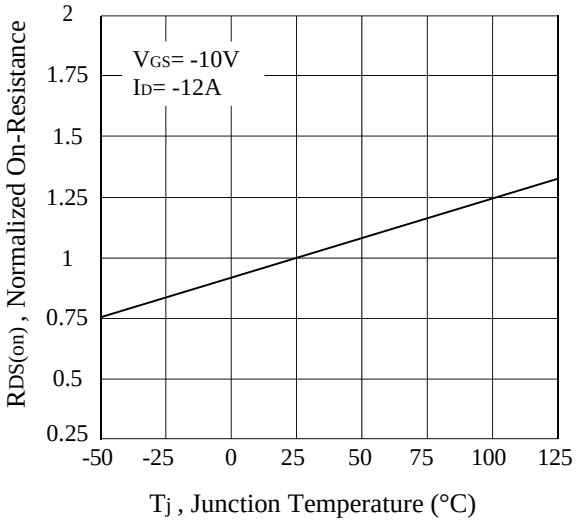

Figure 4. On-Resistance Variation with Temperature

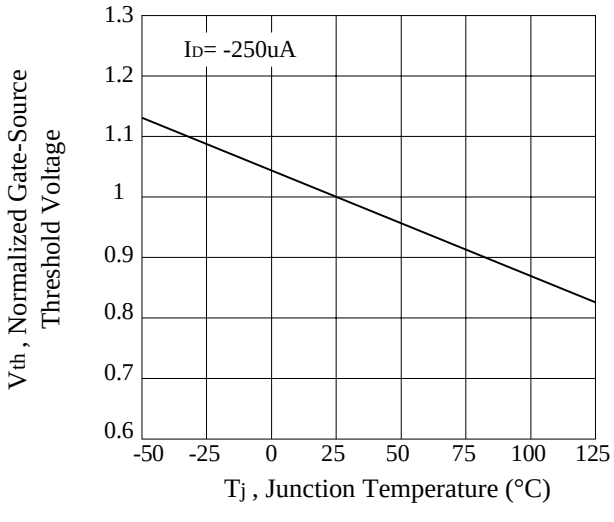

Figure 5. Gate Threshold Variation with Temperature

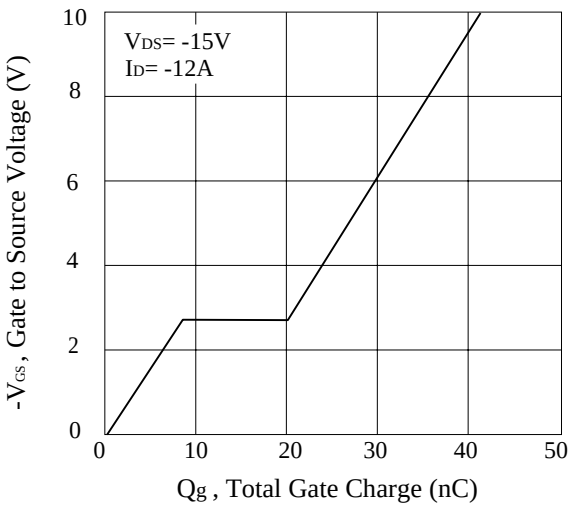

Figure 6. Gate Charge

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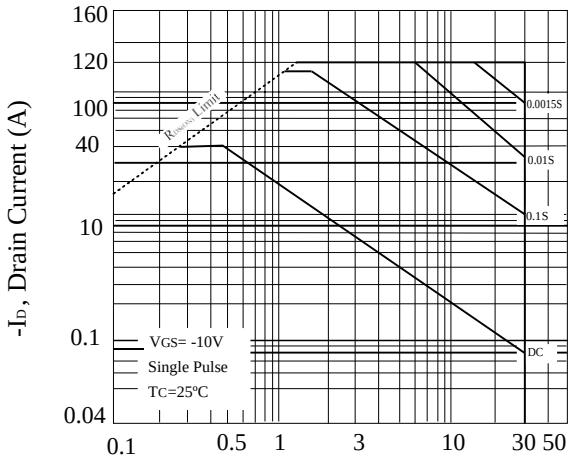

Figure 7. Maximum Safe Operating Area

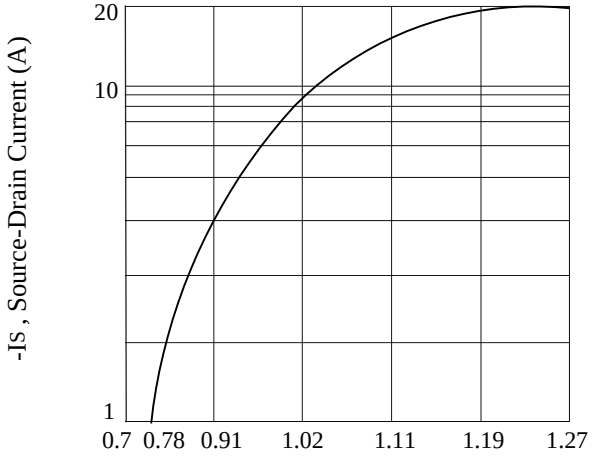

Figure 8. Body Diode Forward Voltage Variation with Source Current

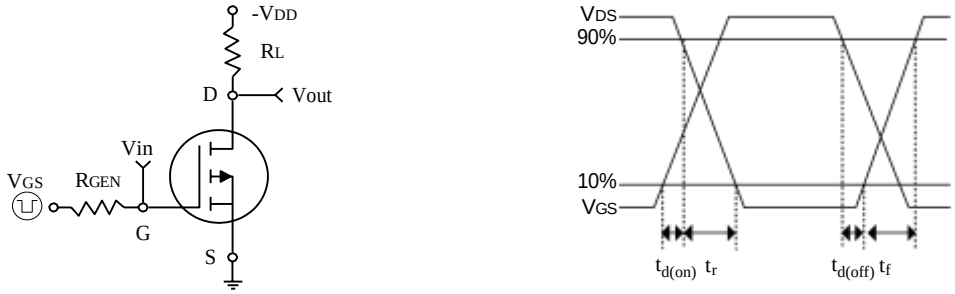

Figure 9. Switching Test Circuit and Switching Waveforms

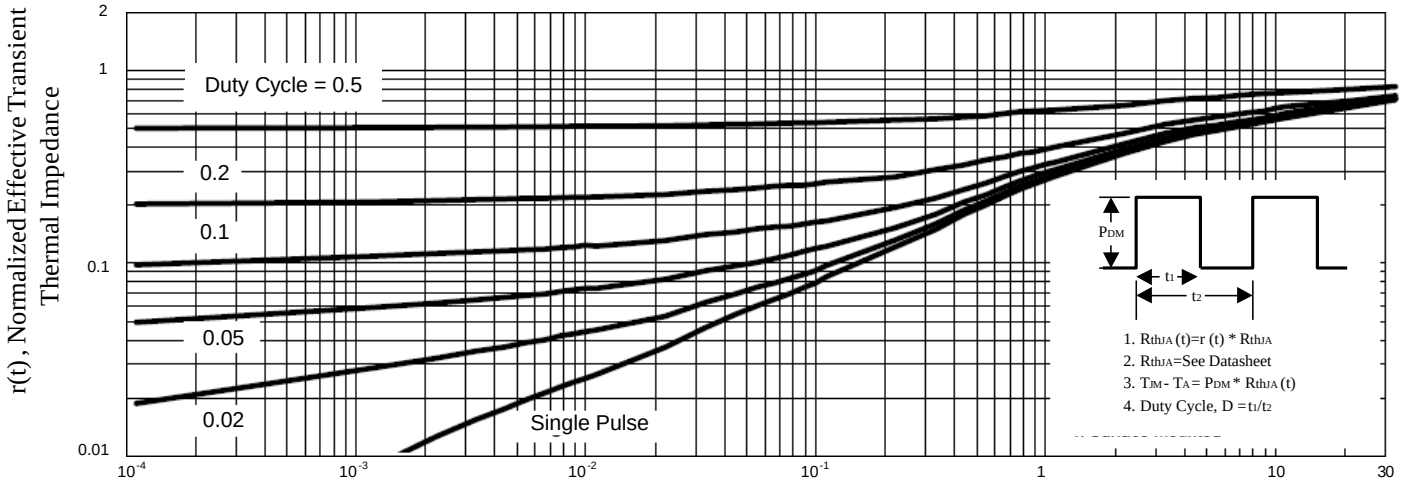

Figure 10. Normalized Thermal Transient Impedance Curve