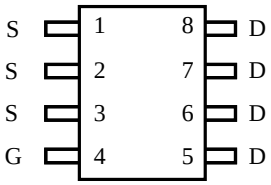
P -Channel High Density Trench MOSFET

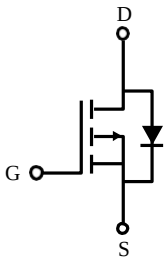
Features:

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

SOP-8



PRODUCT SUMMARY		
$V_{(BR)DSS}$	$R_{DS(on)}$ (mΩ) Max	I_D
-30V	8 @ V_{GS}= -10V	-15A
	10.7 @ V_{GS}= -4.5V	



ABSOLUTE MAXIMUM RATINGS (TA = 25 ℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuousa (Note 1)	T_A = 25 ℃	I_D	-15	A
	T_A = 70 ℃		-8.5	
Pulse Drain Current (Note 2)		I_{DM}	-60	
Avalanche Current		I_{AS}	-45	
Single Pulse Avalanche Energy	L=0.1mH	E_{AS}	95	mJ
Maximum Power Dissipation (Note 1)	T_A=25℃	P_D	2.5	W
	T_A=75℃		1.6	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Case (Note 1)	R_{thJC}	30	℃/W
Thermal Resistance,Junction-to-Ambient (Note 1)	R_{thJA}	75	℃/W

Note:

1. Surface Mounted on FR4 Board , t ≤ 10sec .
2. Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS (TA = 25 ℃ 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} = -20V , V_{GS} = 0V , Tj = 125℃			-10	
Gate-Body Leakage	I_{GSS}	V_{GS} = ±25V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250uA	-1	-1.5	-3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -10V , I_D = -12A		6.5	8.0	mΩ
		V_{GS} = -4.5V , I_D = -10A		8.2	10.7	mΩ
Forward Transconductance	gfs	V_{DS} = -10V , I_D = -12A		24		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	V_{DS} = -15V , V_{GS} = 0V f = 1.0MHz		4330		pF
Output Capacitance	C_{OSS}			499		pF
Reverse Transfer Capacitance	C_{RSS}			373		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$td_{(ON)}$	V_{DS} = -15V , I_D = -1A V_{GS} = -10V R_{GEN} = 6 Ω		51.0		nS
Rise Time	tr			40.0		nS
Turn-Off Delay Time	$td_{(OFF)}$			77.0		nS
Fall Time	tf			56.0		nS
Total Gate Charge	Qg	V_{DS} = -15V , I_D = -12A V_{GS} = -10V		88.0		nC
Gate-Source Charge	Qgs			14.0		nC
Gate-Drain Charge	Qgd			8.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Drain-Source Diode Forward Current (Note 1)	I_S				-2.1	A
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0V , I_S = I_F			-1.2	V

Note：
3. Pulse Test Pulse width ≤ 300us , Duty Cycle ≤ 2% .
4. Guaranteed by design , not subject to production testing .

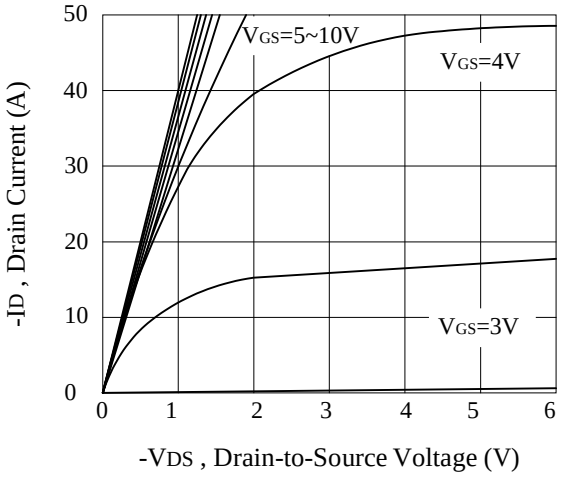


Figure 1. Output Characteristics

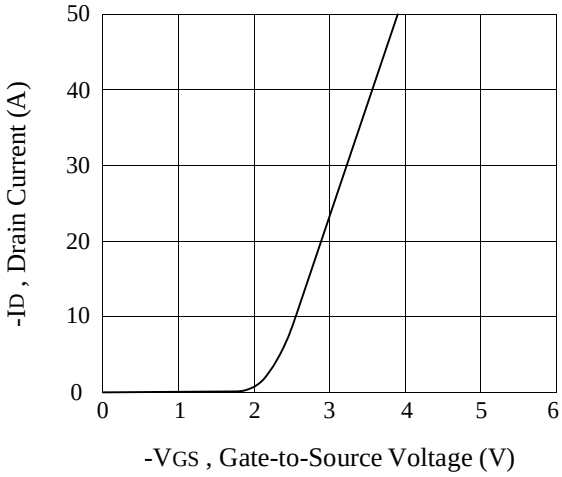


Figure 2. Transfer Characteristics

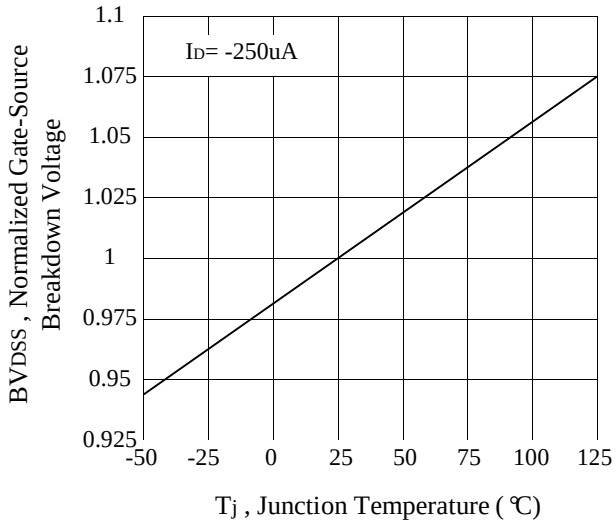


Figure 3. Breakdown Voltage Variation with Temperature

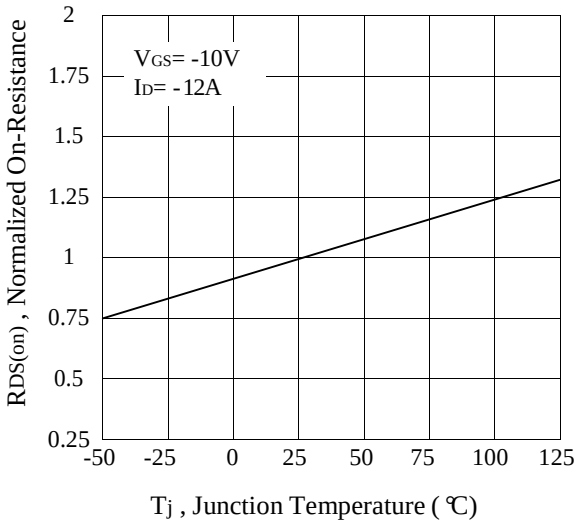


Figure 4. On-Resistance Variation with Temperature

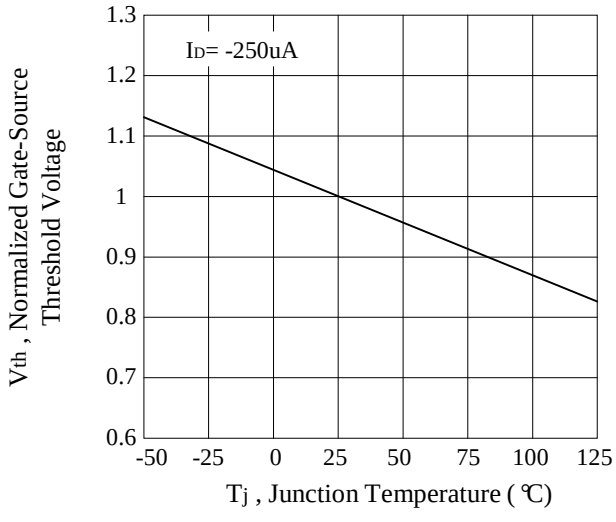


Figure 5. Gate Threshold Variation with Temperature

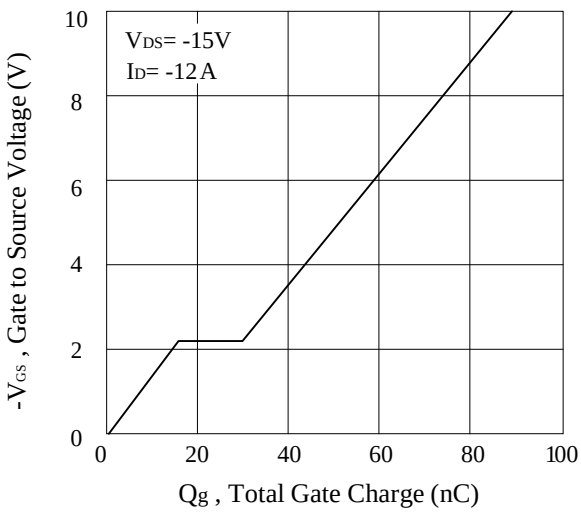


Figure 6. Gate Charge

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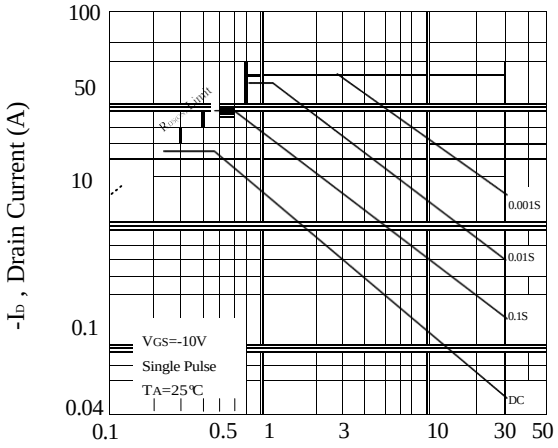

Figure 7. Maximum Safe Operating Area

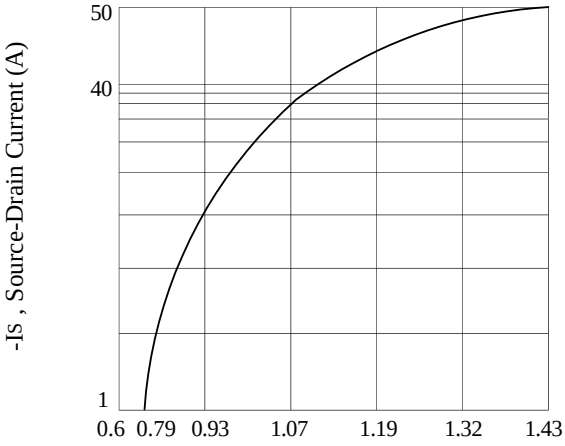

Figure 1. Body Diode Forward Voltage Variation with Source Current

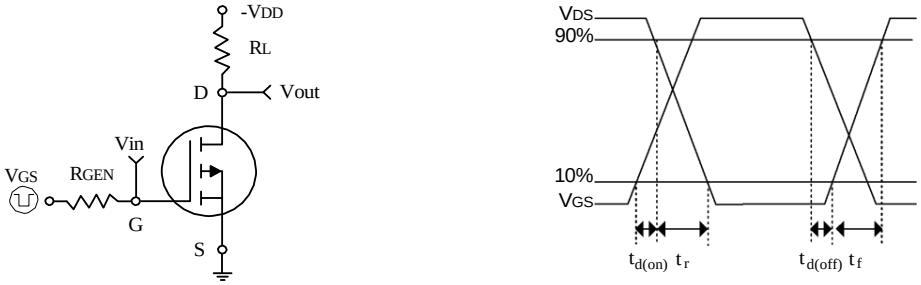

Figure 9. Switching Test Circuit and Switching Waveforms

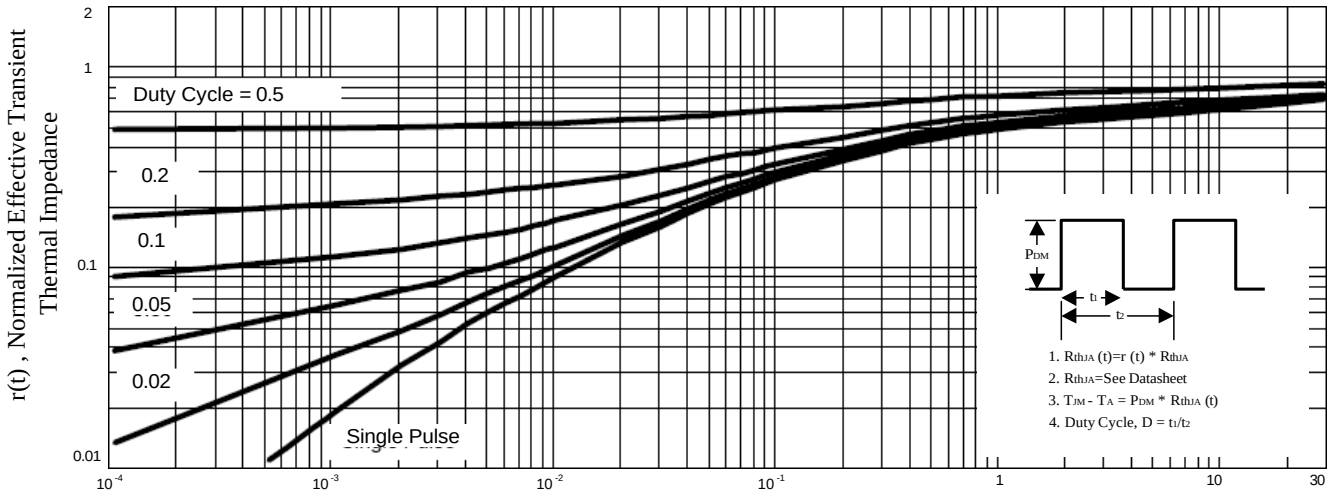

Figure 10. Normalized Thermal Transient Impedance Curve