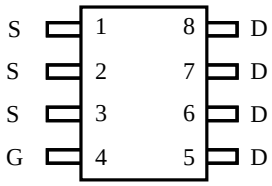
N-Channel High Density Trench MOSFET

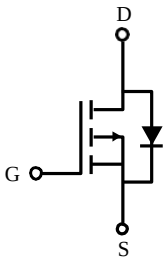
Features:

- 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
60V	39 @ V_{GS}=10V	8A
	46 @ V_{GS}=4.5V	6A



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuousa T_C = 25 ℃		I_D	10	A
		I_{DM}	40	
Maximum Power Dissipation (Note 1)	T_A=25℃	P_D	1.7	W
	T_A=75℃		1	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 1)	R_{thJA}	48	℃/W

Note：

1. Surface Mounted on FR4 Board , t ≤ 10sec .

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	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V , V_{GS} = 0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250uA	1	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V , I_D = 8A		33	39	mΩ
		V_{GS} = 4.5V , I_D = 6A		36	46	mΩ
Forward Transconductance	gfs	V_{DS} = 5V , I_D = 5A		10		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	V_{DS} = 30V , V_{GS} = 0V f = 1.0MHz		1112		pF
Output Capacitance	C_{OSS}			63		pF
Reverse Transfer Capacitance	C_{RSS}			42		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$td_{(ON)}$	V_{DS} = 30V , I_D = 1A V_{GS}= 10V R_{GS} = 6 Ω , R_L = 15 Ω		6.1		nS
Rise Time	tr			23		nS
Turn-Off Delay Time	$td_{(OFF)}$			43		nS
Fall Time	tf			22		nS
Total Gate Charge	Qg	V_{DS} = 30V , I_D = 8A V_{GS} = 10V		27		nC
Gate-Source Charge	Qgs			3.8		nC
Gate-Drain Charge	Qgd			4.7		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Drain-Source Diode Forward Current (Note 1)	I_S			6		A
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0V , I_S = 1.0A		0.77	1.1	V

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

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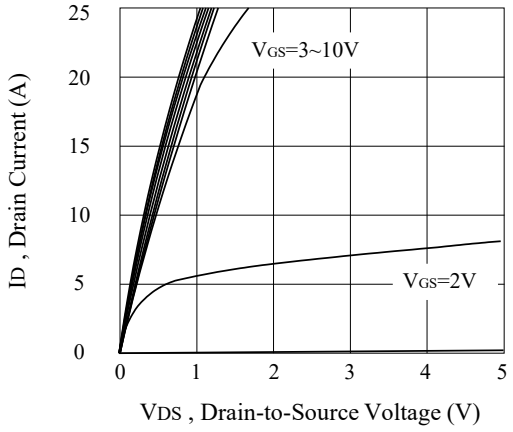

Figure 1. Output Characteristics

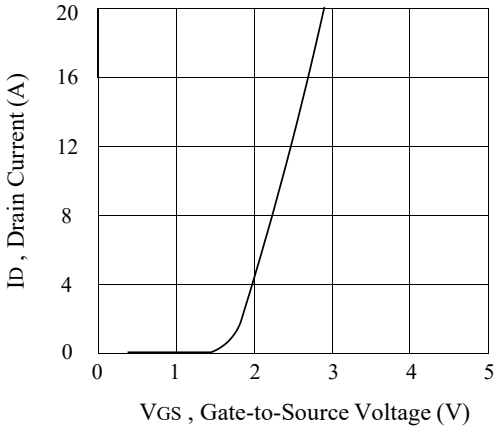

Figure 2. Transfer Characteristics

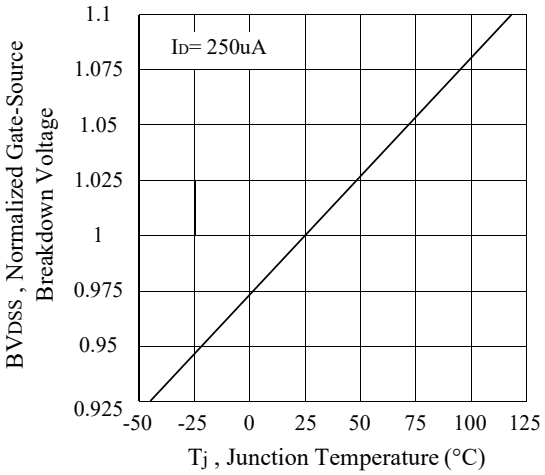

Figure 3. Breakdown Voltage Variation with Temperature

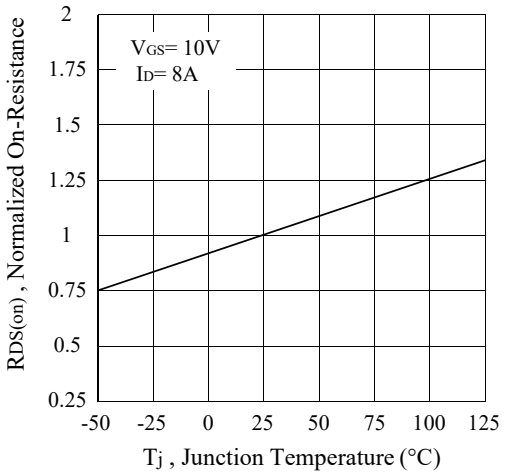

Figure 4. On-Resistance Variation with Temperature

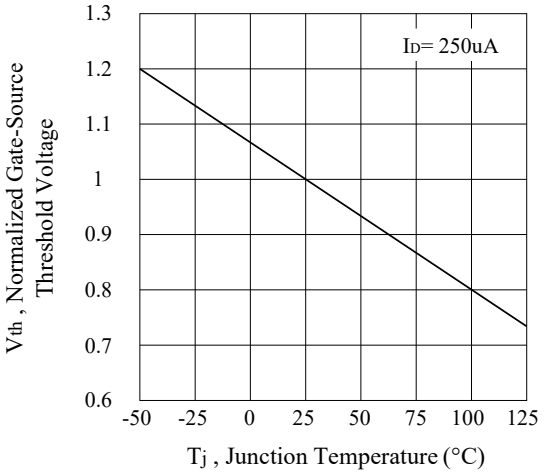

Figure 5. Gate Threshold Variation with Temperature

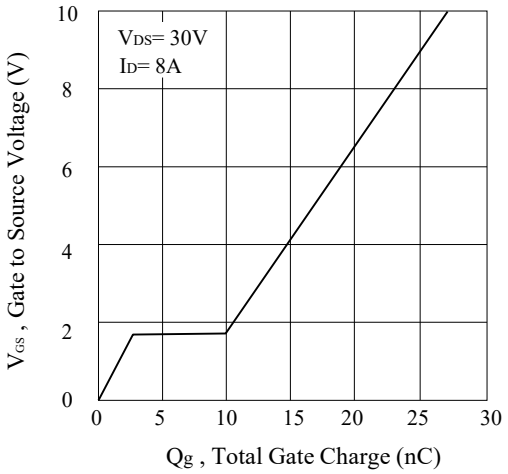

Figure 6. Gate Charge

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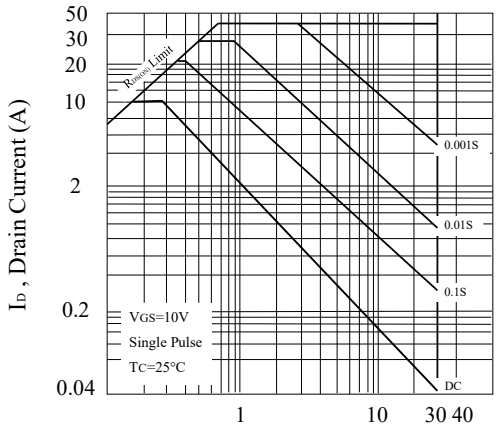

Figure 7. Maximum Safe Operating Area

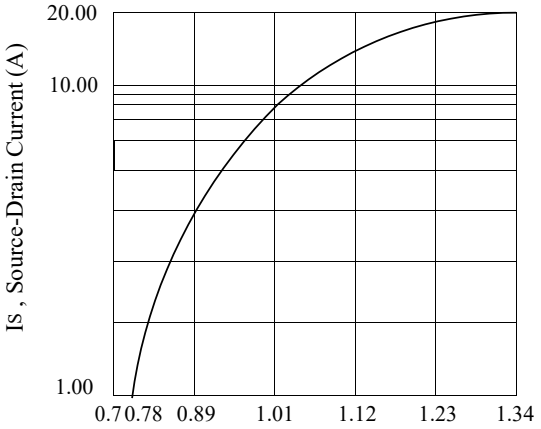

Figure 8. Body Diode Forward Voltage Variation with Source Current

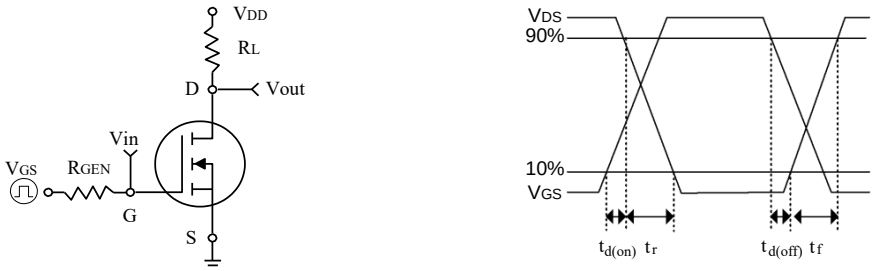

Figure 9. Switching Test Circuit and Switching Waveforms

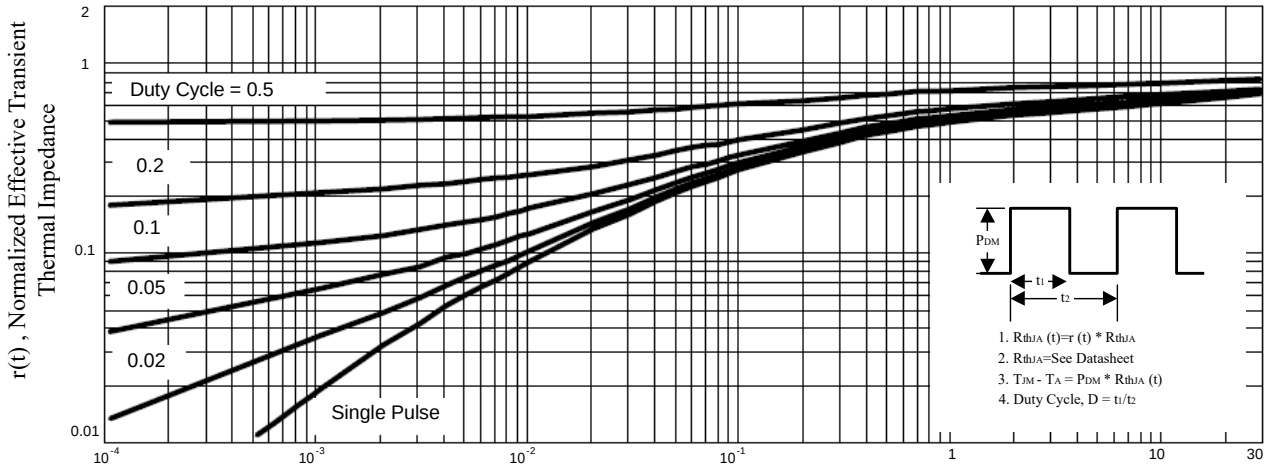

Figure 10. Normalized Thermal Transient Impedance Curve