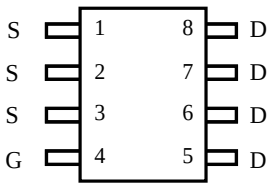
P -Channel High Density Trench MOSFET

Features:

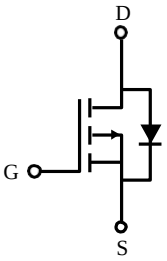
- Super high dense cell trench design for low RDS(on).
- Rugged and reliable.
- Surface Mount package.

SOP-8



PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(on)}$ (mΩ) Max	I_D
-30V	19 @ V_{GS} = -10V	-16A
	26 @ V_{GS} = -4.5V	



ABSOLUTE MAXIMUM RATINGS (T_A = 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	-16	A
	T_A = 70 ℃		-12	
Pulse Drain Current(Note 2)		I_{DM}	-60	
Avalanche Current		I_{AS}	-20	
Single Pulse Avalanche Energy	L=0.1mH	E_{AS}	60	mJ
Maximum Power Dissipation (Note 1)	T_A=25℃	P_D	3.1	W
	T_A=75℃		2.0	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Case (Note 1)	R_{thJC}	6	℃/W
Thermal Resistance,Junction-to-Ambient (Note 1)	R_{thJA}	40	℃/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℃			-30	
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	-2	-3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -10V , I_D = -12A		14.5	19	mΩ
		V_{GS} = -4.5V , I_D = -9A		18.5	26	mΩ
Forward Transconductance	gfs	V_{DS} = -10V , I_D = -12A		20		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	V_{DS} = -15V , V_{GS} = 0V f = 1.0MHz			1380	pF
Output Capacitance	C_{OSS}				186	pF
Reverse Transfer Capacitance	C_{RSS}				165	pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$td_{(ON)}$	V_{DD} = -15V , I_D = -1A V_{GS} = -10V R_{GS} = 6 Ω		8.5		nS
Rise Time	tr			9.5		nS
Turn-Off Delay Time	$td_{(OFF)}$			22		nS
Fall Time	tf			8		nS
Total Gate Charge (10V)	Qg	V_{DS} = -15V , I_D = -12A V_{GS} = -10V		17		nC
Total Gate Charge (4.5V)	Qg			32		nC
Gate-Source Charge	Qgs			4.8		nC
Gate-Drain Charge	Qgd			7.9		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Drain-Source Diode Forward Current (Note 1)	I_S			-3.6		A
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0V , I_F = I_S		-0.8	-1.2	V

Note:

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

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

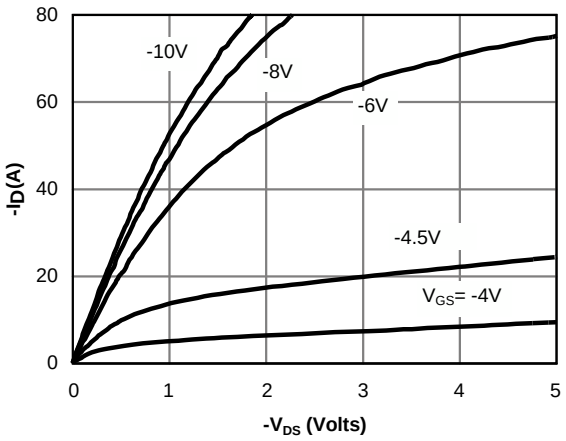


Figure 1: On-Region Characteristics

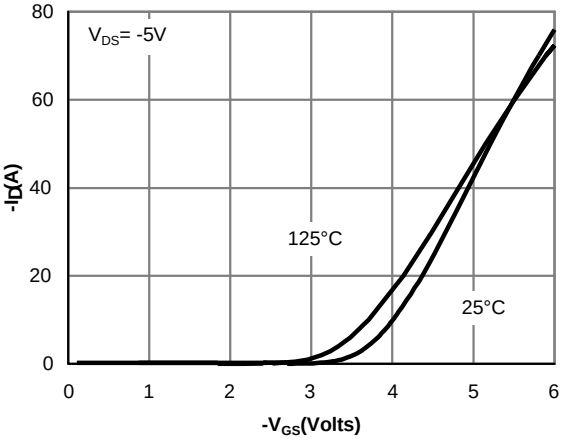


Figure 2: Transfer Characteristics

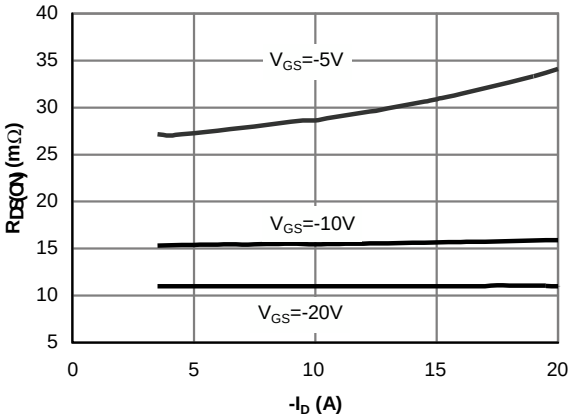


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

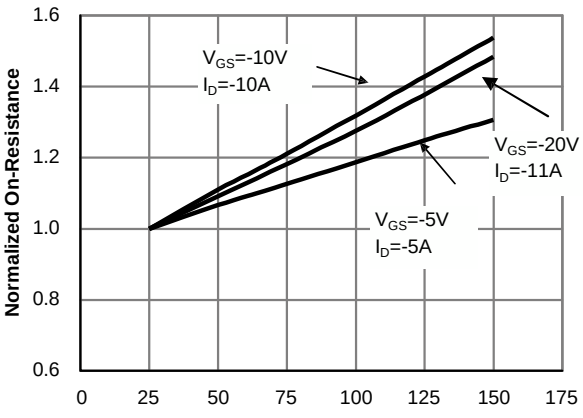


Figure 4: On-Resistance vs. Junction Temperature

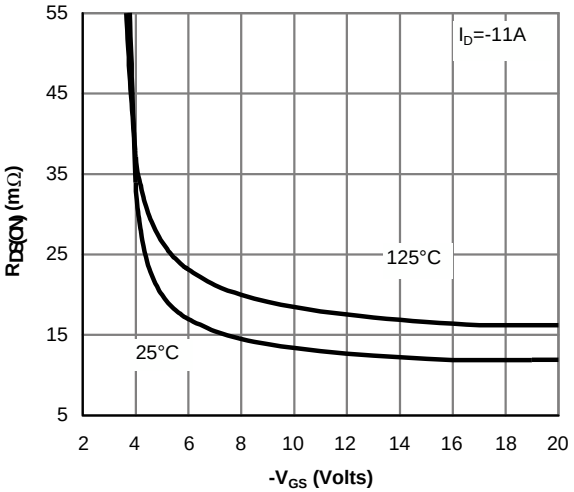


Figure 5: On-Resistance vs. Gate-Source Voltage

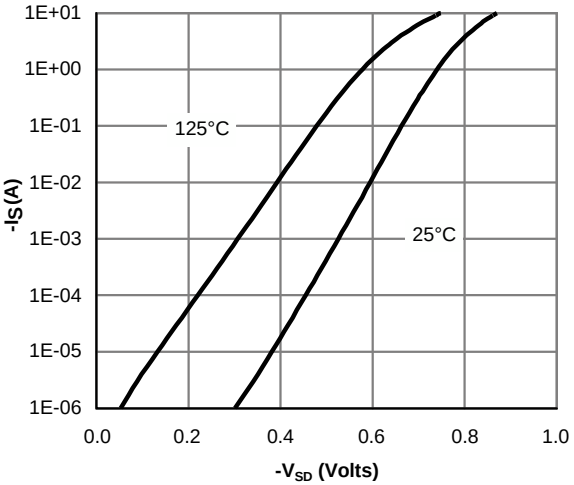


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

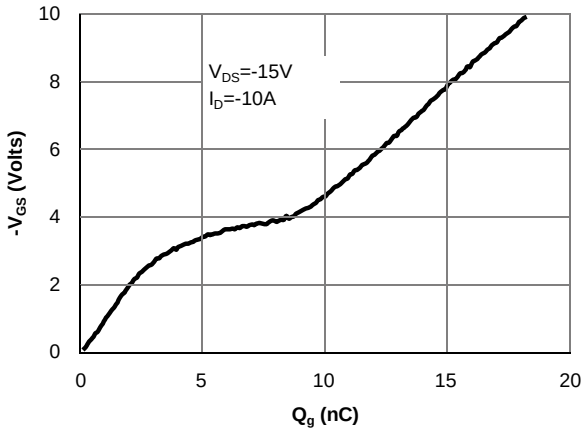


Figure 7: Gate-Charge Characteristics

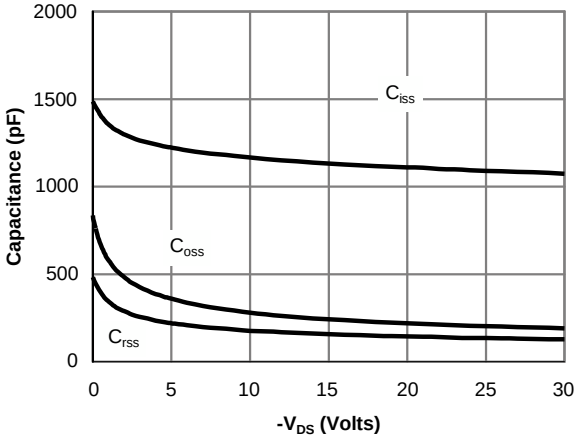


Figure 8: Capacitance Characteristics

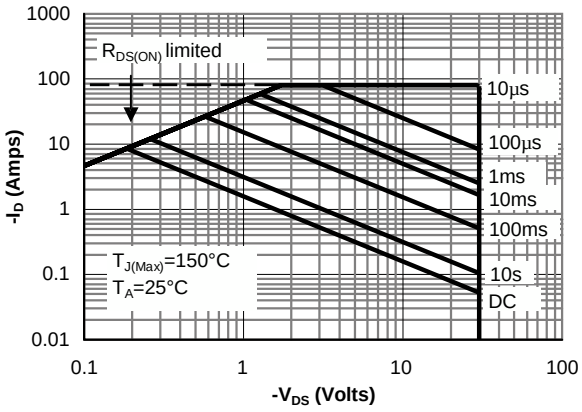


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

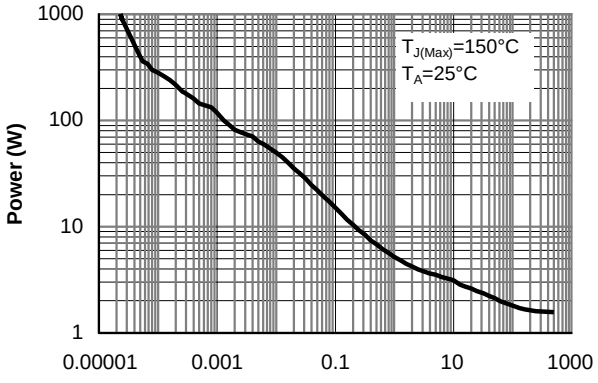


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

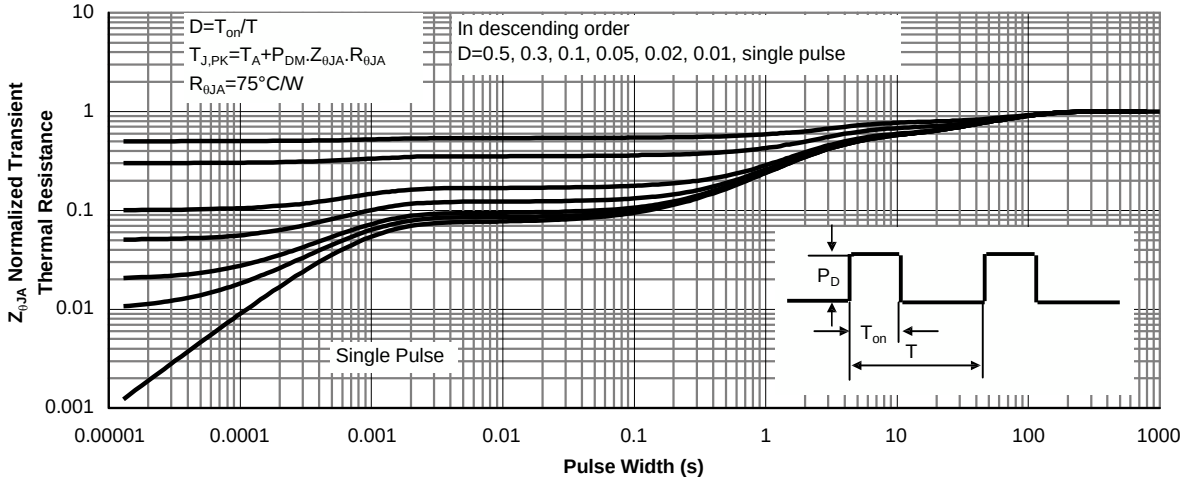
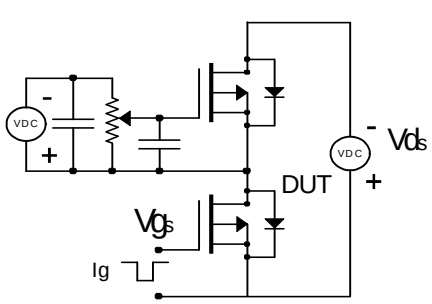
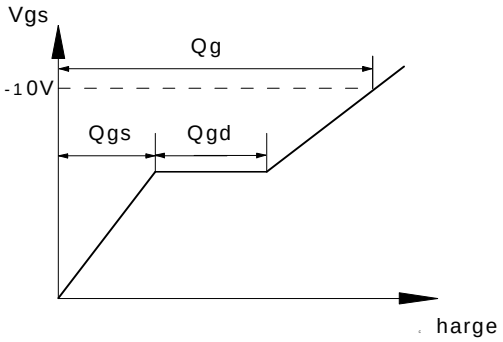


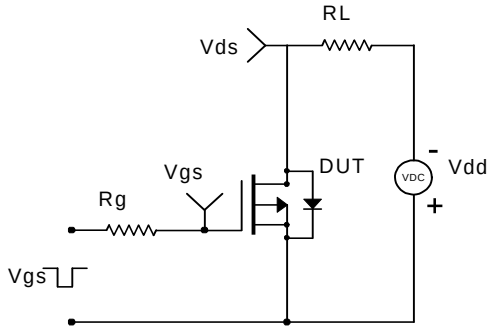
Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)

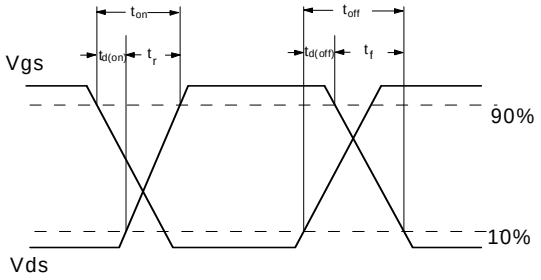
Gate Charge Test Circuit & Waveform



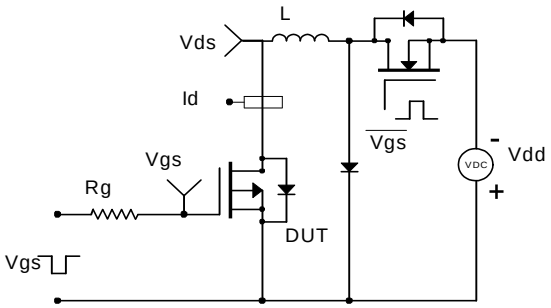


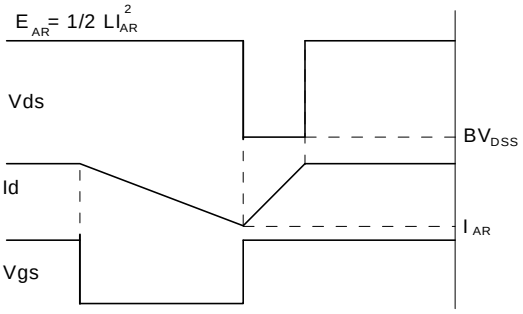
Resistive Switching Test Circuit & Waveforms





Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms