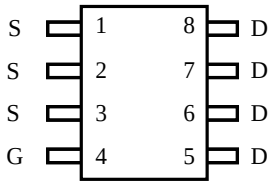
P -Channel High Density Trench MOSFET

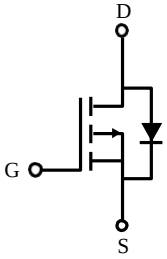
Features:

- 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
-20V	10.5 @ V_{GS}= -10V	-16A
	14 @ V_{GS}= -4.5V	



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	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}	-16	
Single Pulse Avalanche Energy	L=0.1mH	E_{AS}	60	mJ
Maximum Power Dissipation (Note 1)	T_A=25℃	P_D	2.4	W
	T_A=75℃		1.5	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Case (Note 1)	R_{thJC}	9.6	℃/W
Thermal Resistance,Junction-to-Ambient (Note 1)	R_{thJA}	62	℃/W

Note:

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

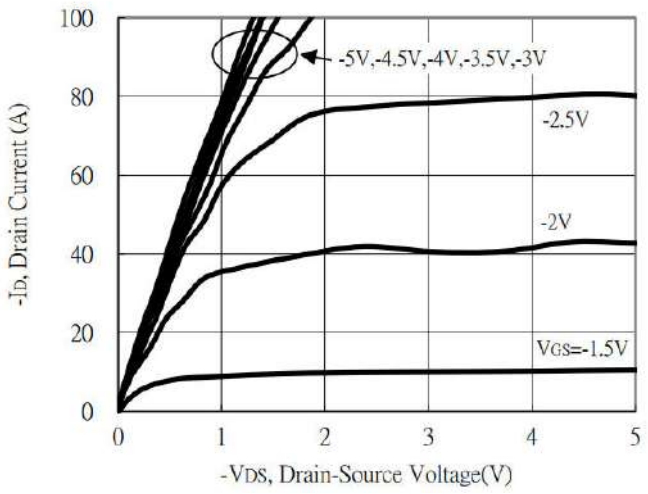
ELECTRICAL CHARACTERISTICS (TA = 25 ℃ unless otherwise noted)

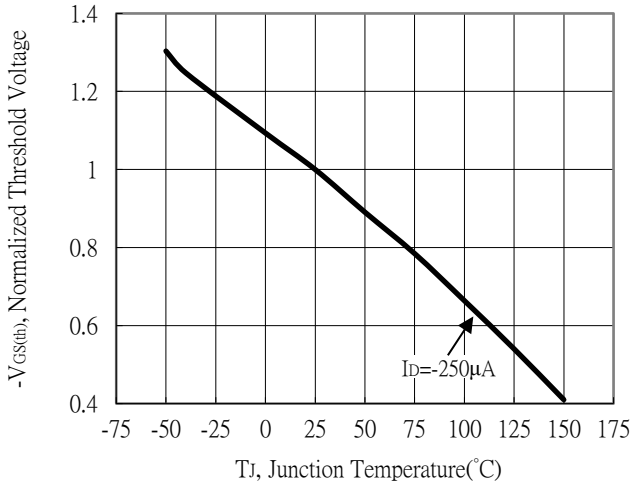
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = -250uA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V , V_{GS} = 0V, Tj = 25℃			-1	uA
		V_{DS} = -20V , V_{GS} = 0V , Tj = 125℃			-30	
Gate-Body Leakage	I_{GSS}	V_{GS} = ±12V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250uA	-0.4	-0.6	-1.4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -4.5V , I_D = -12A		8.1	10.5	mΩ
		V_{GS} = -2.5V , I_D = -9A		10.5	14	mΩ
Forward Transconductance	gfs	V_{DS} = -10V , I_D = -12A		23		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	V_{DS} = -15V , V_{GS} = 0V f = 1.0MHz		3878		pF
Output Capacitance	C_{OSS}			397		pF
Reverse Transfer Capacitance	C_{RSS}			341		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$td_{(ON)}$	V_{DD} = -15V , I_D = -1A V_{GS} = -4.5VR_{GS} = 6 Ω		38		nS
Rise Time	tr			19		nS
Turn-Off Delay Time	$td_{(OFF)}$			97		nS
Fall Time	tf			76		nS
Total Gate Charge (10V)	Qg	V_{DS} = -15V , I_D = -12A V_{GS} = -4.5V		34		nC
Total Gate Charge (4.5V)	Qg			21		nC
Gate-Source Charge	Qgs			8.1		nC
Gate-Drain Charge	Qgd			10.8		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Drain-Source Diode Forward Current (Note 1)	I_S			-11		A
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0V , I_F = I_S		-0.8	-1.2	V

Note:

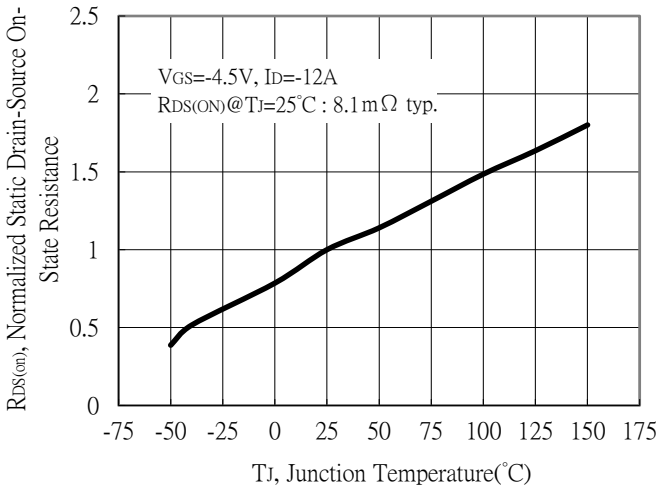
3. Pulse Test Pulse width ≤ 300us , Duty Cycle ≤ 2% .
4. Guaranteed by design , not subject to production testing .

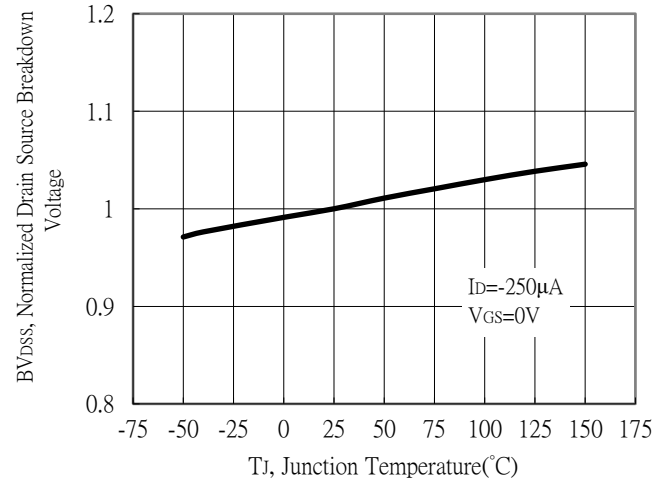
Typical Output Characteristics



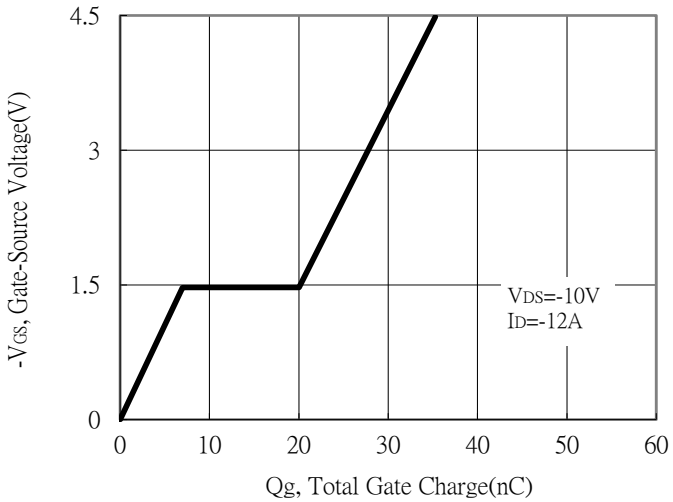


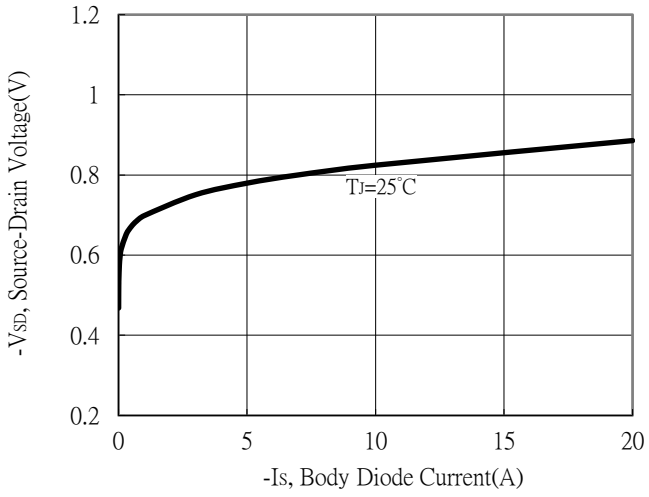
Drain-Source On-State Resistance vs Junction Temperature



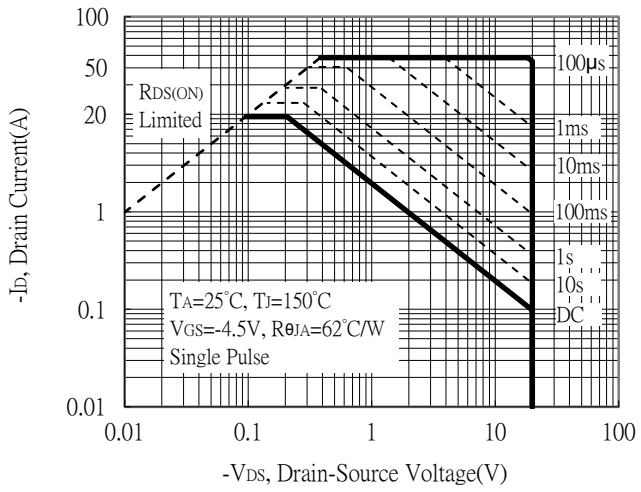


Gate Charge Characteristics

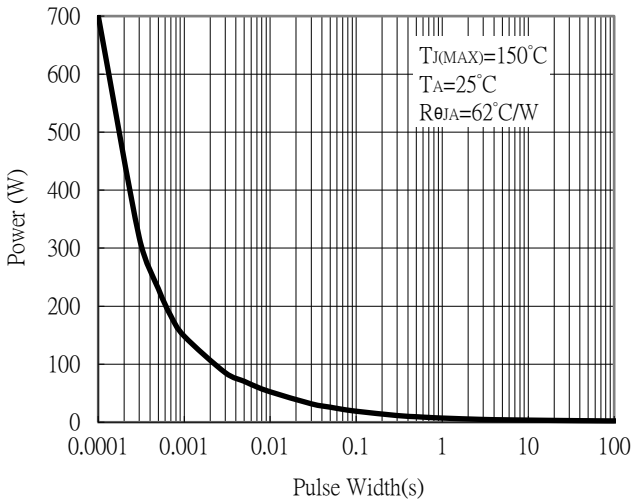




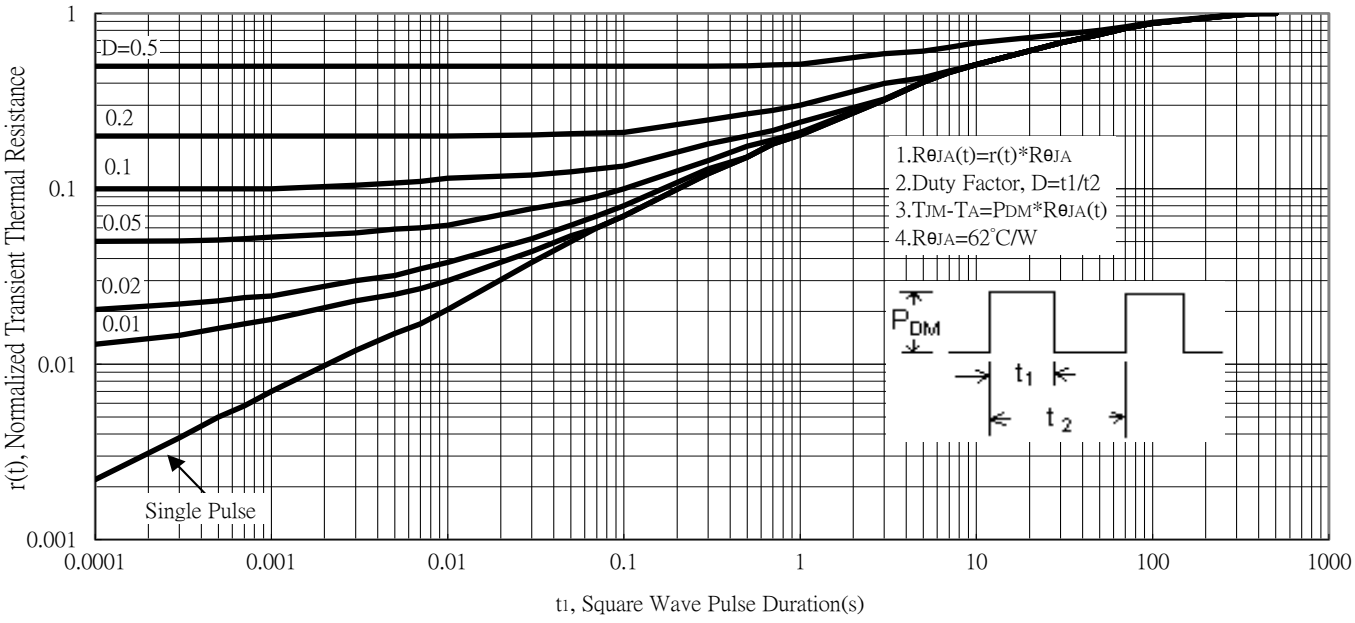
Maximum Safe Operating Area



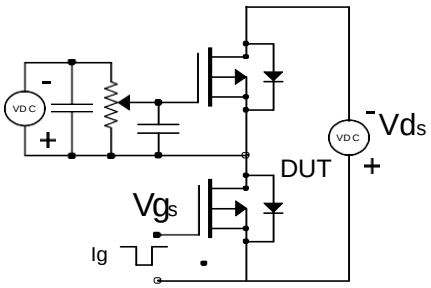
Single Pulse Power Rating, Junction to Ambient

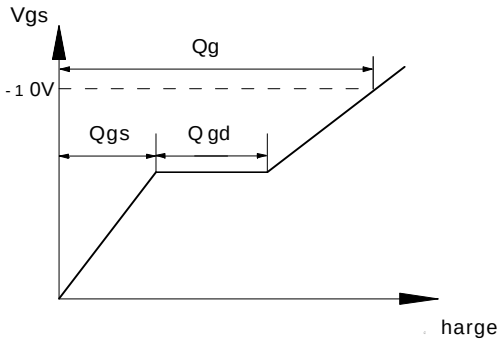


Transient Thermal Response Curves

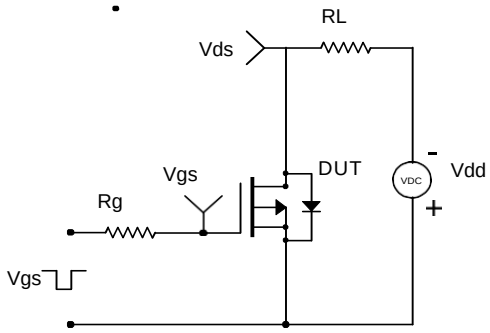


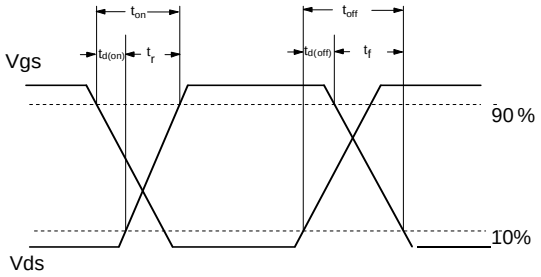
Gate Charge Test Circuit & Waveform



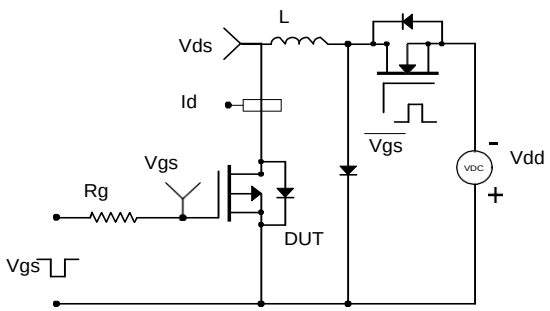


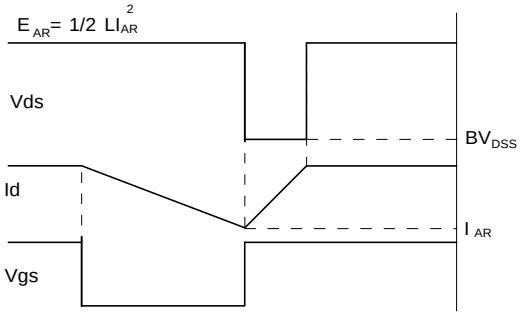
Resistive Switching Test Circuit & Waveforms





Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms