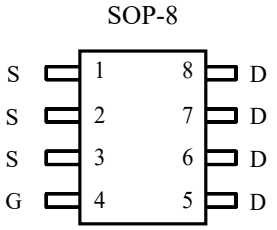
N -Channel High Density Trench MOSFET

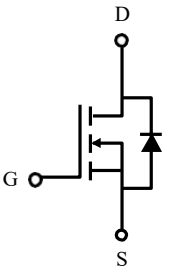
Features:

- 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	8 @ V_{GS} = 10V	20A
	9.5 @ 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	20	A
-Pulse (Note 2)		I_{DM}	80	
Maximum Power Dissipation (Note 1)	T_A=25℃	P_D	3.2	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-Ambient (Note 1)	R_{thJA}	42	°C/W

Note:

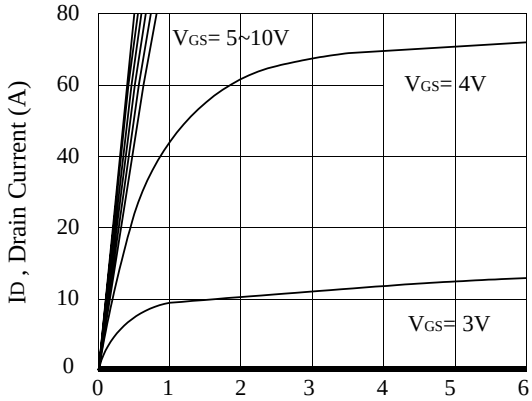
1. Surface Mounted on FR4 Board , t ≤ 10sec .
2. Pulse width limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS (TA = 25 ℃ unless otherwise noted)

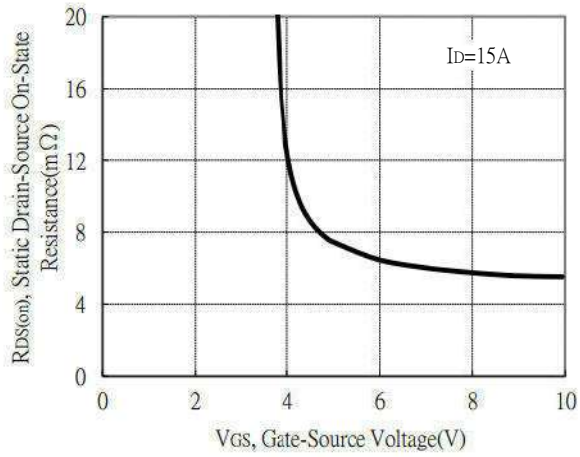
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = 250uA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V , V_{GS} = 0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250uA	1	1.6	3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V , I_D = 15A		5.5	8	mΩ
		V_{GS} = 4.5V , I_D = 9A		6.8	9.5	mΩ
Forward Transconductance	gfs	V_{DS} = 15V , I_D = 12.5A		22		S
DYNAMIC CHARACTERISTICS (Note 4)						
Input Capacitance	C_{ISS}	V_{DS} = 10V , V_{GS} = 0V f = 1.0MHz		1860		pF
Output Capacitance	C_{OSS}			260		pF
Reverse Transfer Capacitance	C_{RSS}			212		pF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-On Delay Time	$td_{(ON)}$	V_{DD} = 15V , I_D = 1A V_{GEN} = 10V R_{GEN} = 6 Ω , R_L = 15 Ω		9.6		nS
Rise Time	tr			23.4		nS
Turn-Off Delay Time	$td_{(OFF)}$			62.8		nS
Fall Time	tf			23		nS
Total Gate Charge	Qg	V_{DS} = 10V , I_D = 1A V_{GS} = 10V		48		nC
Gate-Source Charge	Qgs			3.4		nC
Gate-Drain Charge	Qgd			14		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Drain-Source Diode Forward Current (Note 1)	I_S			8		A
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0V , I_S = 1.0A		0.7	1.1	V

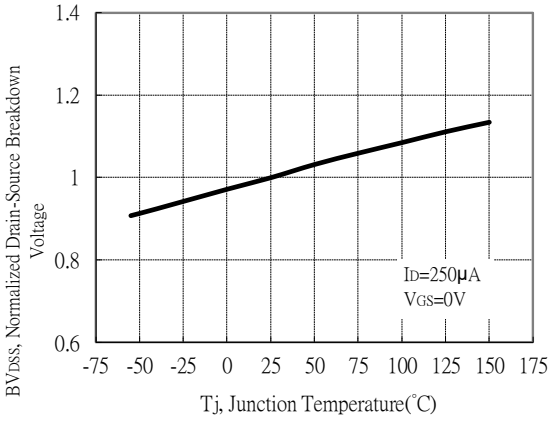
Note:
3. Pulse Test Pulse width ≤ 300us , Duty Cycle ≤ 2% .
4. Guaranteed by design , not subject to production testing .

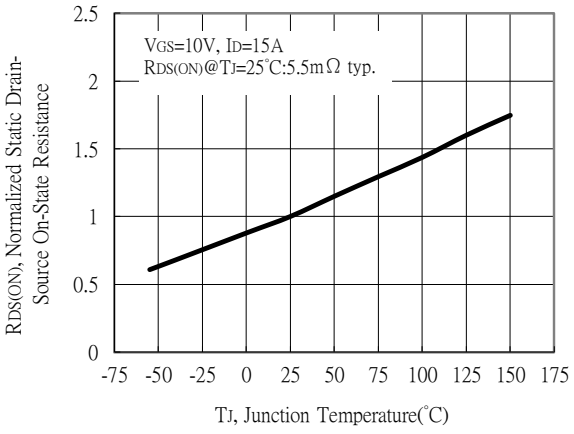
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

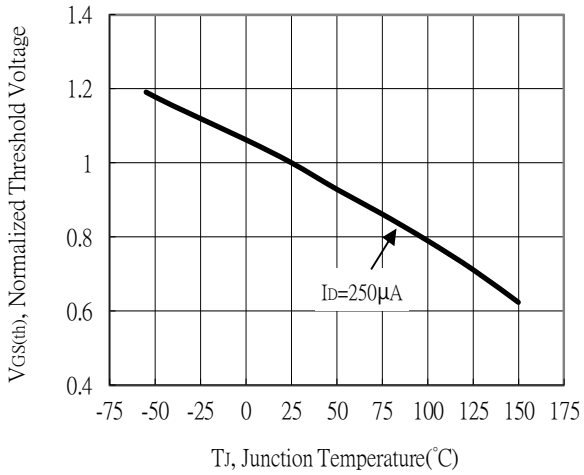


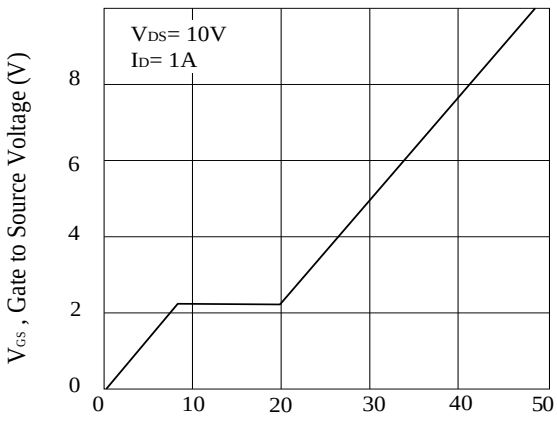
Output Characteristics





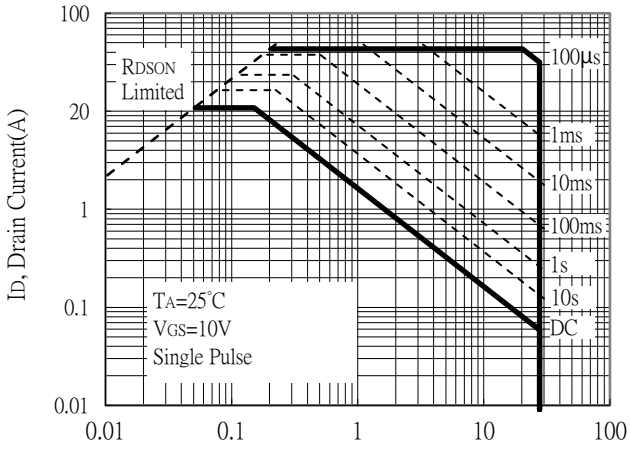




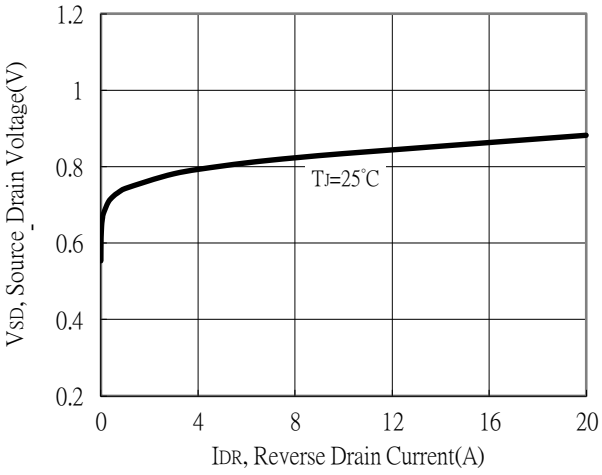


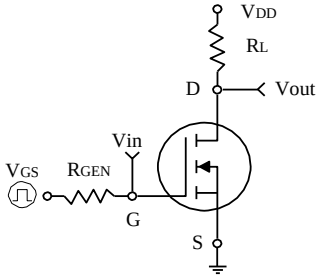
Gate Charge

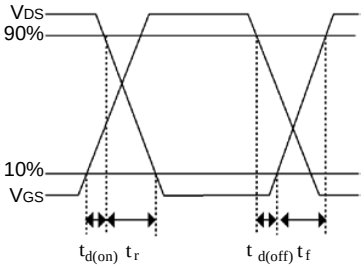
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



Maximum Safe Operating Area







Switching Test Circuit and Switching Waveforms