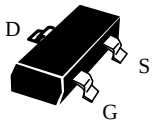
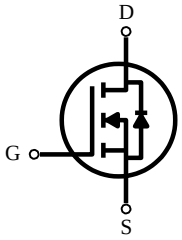
N-Channel High Density Trench MOSFET

Features:

- Super high dense cell trench design for low $R_{DS(on)}$.
- Rugged and reliable.
- Surface Mount package.

SOT-23





PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (mΩ) Max
60V	2.8A	95 @ V_{GS} = 10V
	2.3A	115 @ V_{GS} = 5V
	2.1A	120@ V_{GS} = 4.5V

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-Continuous[a] @ T_A = 25 ℃		I_D	2.8	A
-Pulse[b]		I_{DM}	10	A
Drain-Source Diode Forward Current[a]		I_S	1.2	A
Maximum Power Dissipation[a]	T_A=25 ℃	P_D	1.25	W
	T_A=75 ℃		0.75	
1. Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

THERMAL CHARACTERISTICS

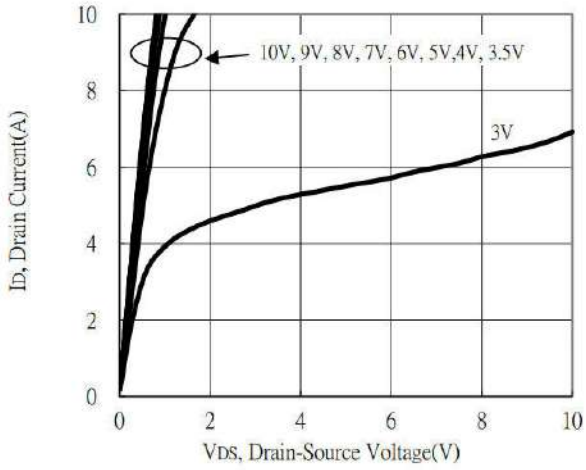
Thermal Resistance,Junction-to-Ambient[a]	R_{thJA}	100	℃/W

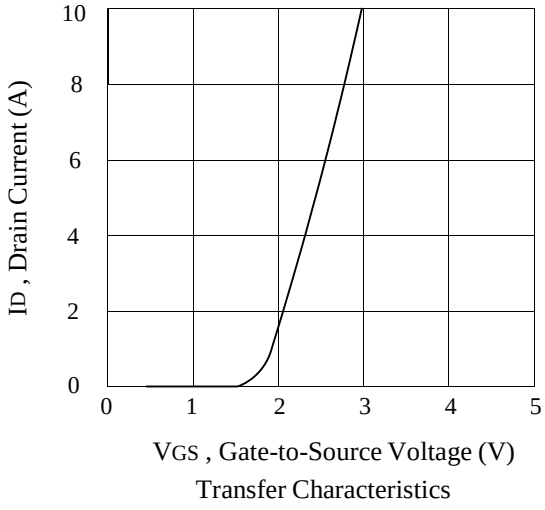
Note：
a. Surface Mounted on FR4 Board , t ≤ 10sec .
b. Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (T_A = 25 ℃ unless otherwise noted)

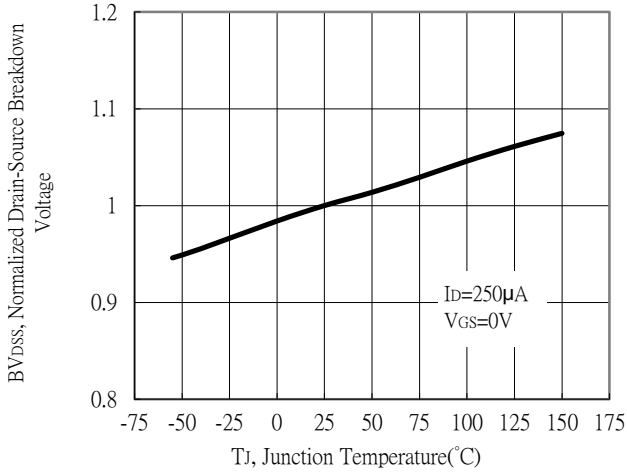
Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = 250uA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V , V_{GS} = 0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS[b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250uA	1	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V , I_D = 2.8A		80	95	mΩ
		V_{GS} = 5V , I_D = 2.3A		90	115	
		V_{GS} = 4.5V , I_D = 2.1A		95	120	
Forward Transconductance	g_{fs}	V_{DS} = 5V , I_D = 2.8A		4		S
DRAIN-SOURCE DIODE CHARACTERISTICS[b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V , I_S = 1.0A			1.2	V
DYNAMIC CHARACTERISTICS[c]						
Input Capacitance	C_{ISS}	V_{DS} = 15V , V_{GS} = 0V f = 1.0MHz		386		pF
Output Capacitance	C_{OSS}			27		pF
Reverse Transfer Capacitance	C_{RSS}			21		pF
SWITCHING CHARACTERISTICS[c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = 15V , I_D = 1A V_{GEN} = 10V R_L = 15 Ω R_{GEN} = 6 Ω		48		ns
Rise Time	t_r			6.5		ns
Turn-Off Delay Time	$t_{D(OFF)}$			22		ns
Fall Time	t_f			4.1		ns
Total Gate Charge	Q_g	V_{DS} = 15V I_D = 3A V_{GS} = 10V		9.2		nC
Gate-Source Charge	Q_{gs}			1.5		nC
Gate-Drain Charge	Q_{gd}			2		nC

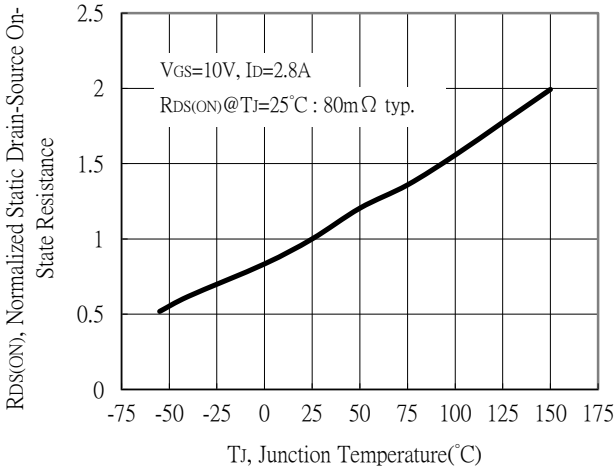
Note：
b. Pulse Test：Pulse width ≤ 300us , Duty Cycle ≤ 2% .
c. Guaranteed by design , not subject to production testing .

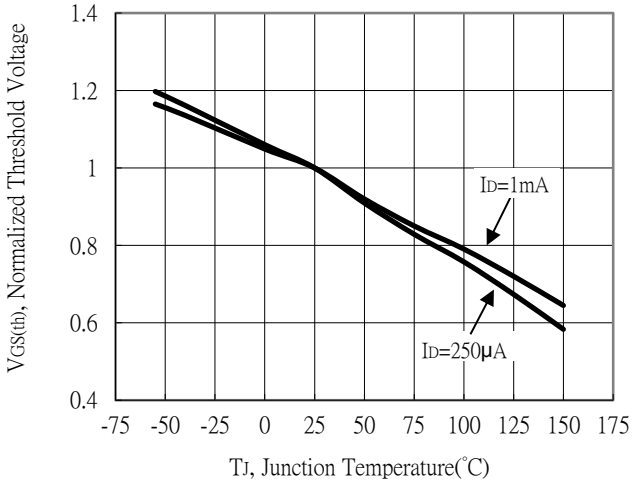


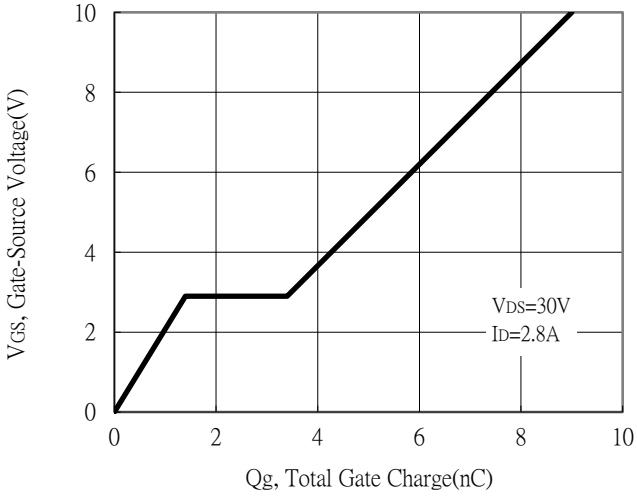


Transfer Characteristics

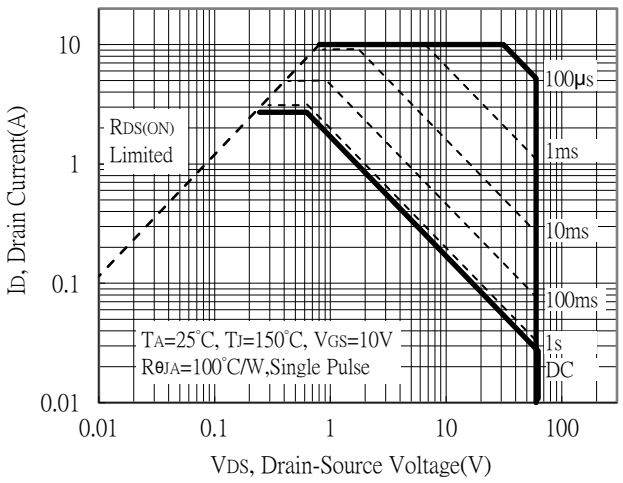


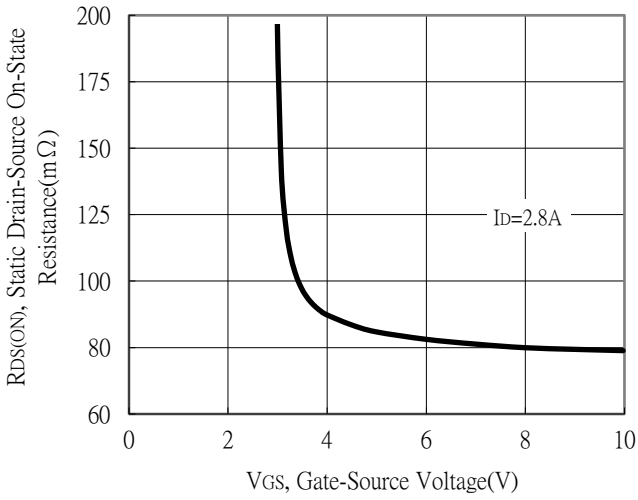


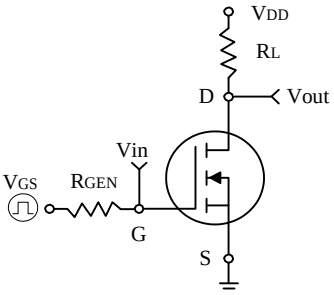


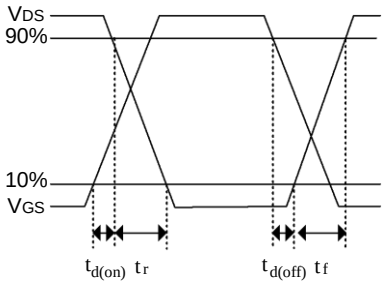


Maximum Safe Operating Area

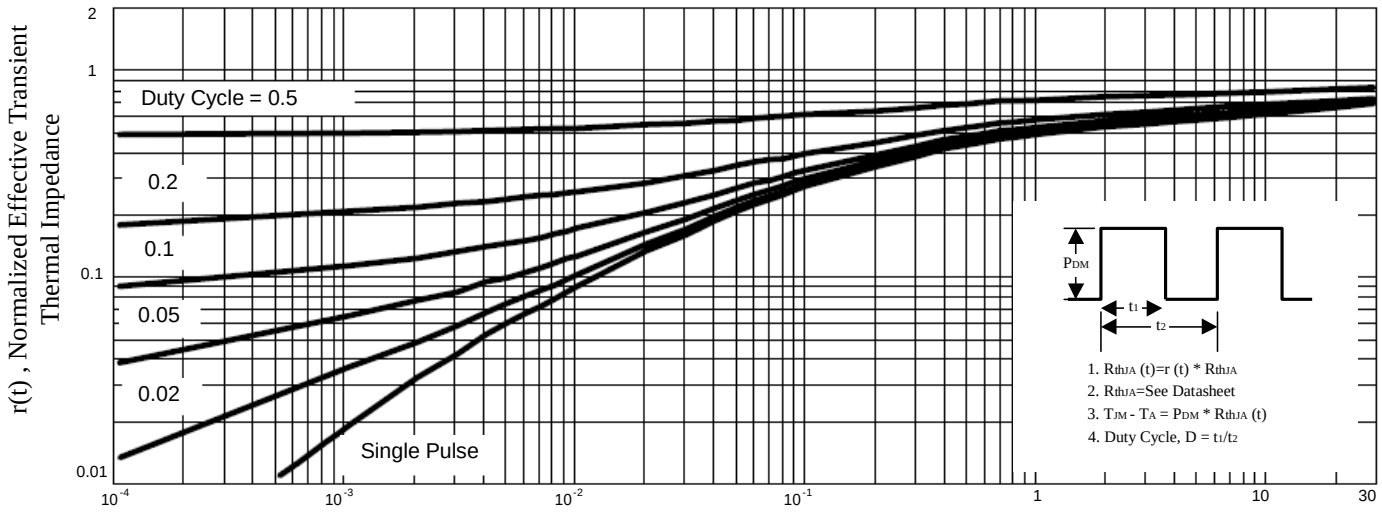








Switching Test Circuit and Switching Waveforms



Normalized Thermal Transient Impedance Curve