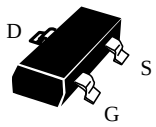
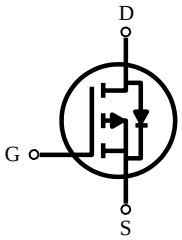
P-Channel High Density Trench MOSFET

FEATURES

SOT-23



- Super high dense cell trench design for low $R_{DS(on)}$.
- Rugged and reliable.
- SOT-23 package.



PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(on)}$ (mΩ) Max
-30V	-4.3A	55@ V_{GS} = -10V
		65@ V_{GS} = -4.5V
		75 @ V_{GS} = -2.5V

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous[a] @ T_A = 25 °C	I_D	-4.3	A
-Pulse[b]	I_{DM}	-16	A
Drain-Source Diode Forward Current[a]	I_S	-2.2	A
Maximum Power Dissipation[a]	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	- 55 to 150	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ[c]	Max	Unit
Thermal Resistance,Junction-to-Ambient[a]	R_{thJA}	75	100	°C/W

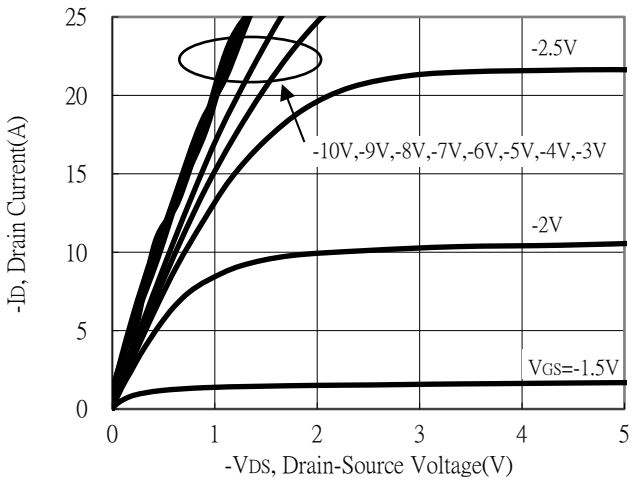
Note：
a. Surface Mounted on FR4 Board , t ≤ 5sec .
b. Pulse Test：Pulse width ≤ 300us , Duty Cycle ≤ 2% .

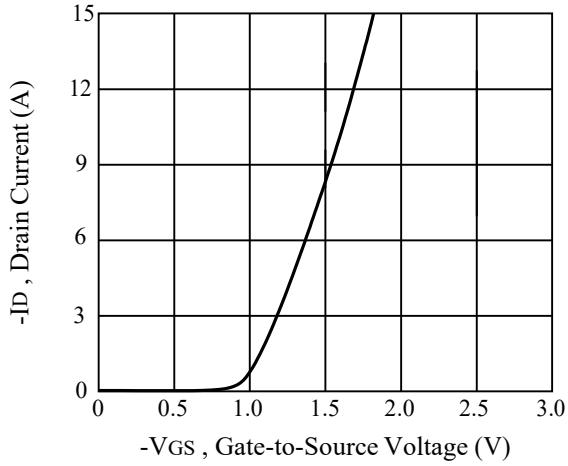
ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

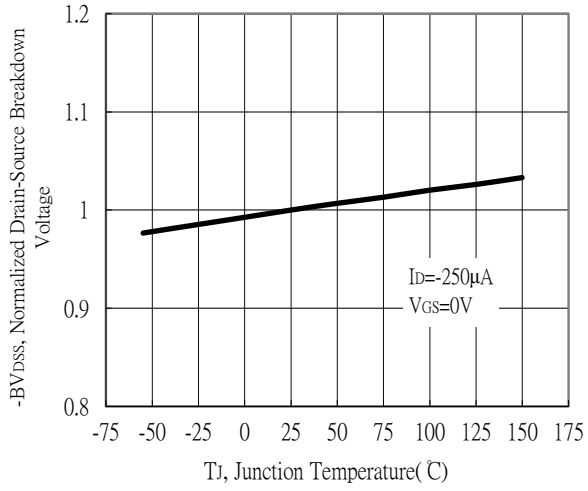
Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = -250uA	- 30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V , V_{GS} = 0V			-1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} = -12V , V_{DS} = 0V			-100	nA
ON CHARACTERISTICS[b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250uA	-0.6	-1	-1.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -10V , I_D = -4.3A		45	55	mΩ
		V_{GS} = -4.5V , I_D = -3.0A		53	64	mΩ
		V_{GS} = -2.5V , I_D = -1.0A		62	75	mΩ
DRAIN-SOURCE DIODE CHARACTERISTICS[b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V , I_S = -1.0A			-1.0	V
DYNAMIC CHARACTERISTICS[c]						
Input Capacitance	C_{ISS}	V_{DS} = 15V , V_{GS} = 0V f = 1.0MHz		1078		pF
Output Capacitance	C_{OSS}			155		pF
Reverse Transfer Capacitance	C_{RSS}			126		pF
SWITCHING CHARACTERISTICS[c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = -15V , I_D = -1A V_{GEN} = -4.5V R_L = 15 Ω R_{GEN} = 10 Ω		5		ns
Rise Time	t_r			3		ns
Turn-Off Delay Time	$t_{D(OFF)}$			30		ns
Fall Time	t_f			10		ns
Total Gate Charge	Q_g	V_{DS} = -15V I_D = -1A V_{GS} = -10V		25.2		nC
Gate-Source Charge	Q_{gs}			3.1		nC
Gate-Drain Charge	Q_{gd}			2.3		nC

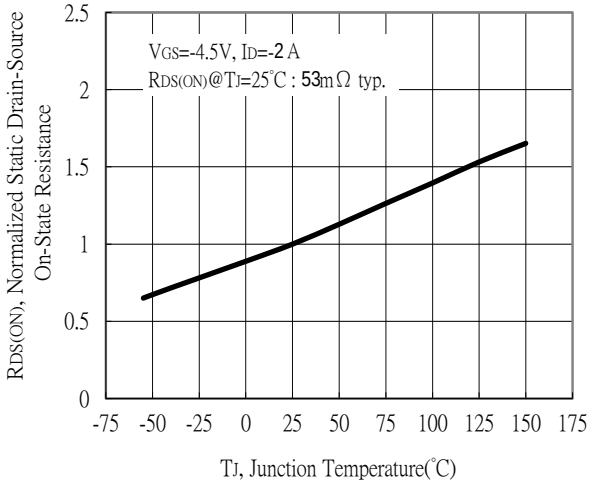
Note：
b. Pulse Test：Pulse width ≤ 300us , Duty Cycle ≤ 2% .
c. Guaranteed by design , not subject to production testing .

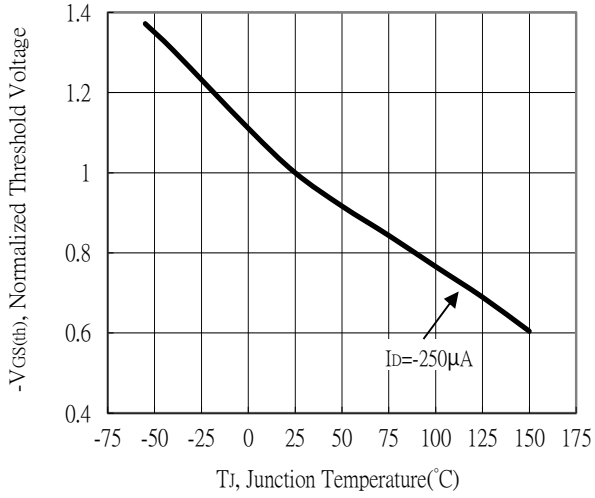
Typical Output Characteristics

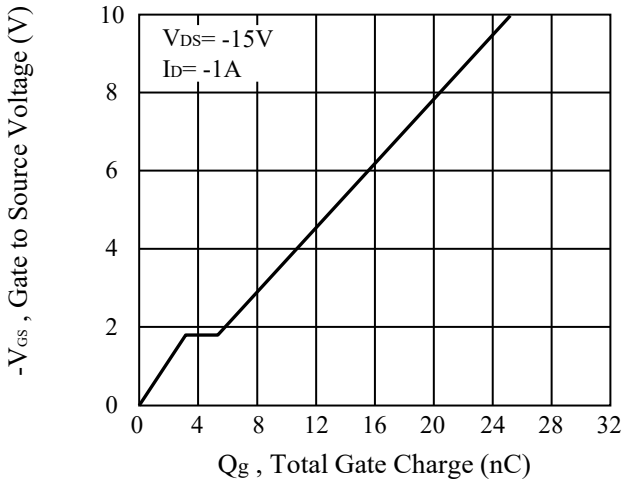




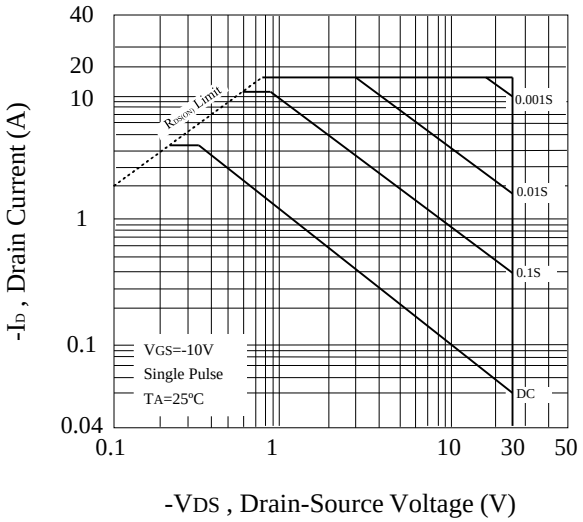




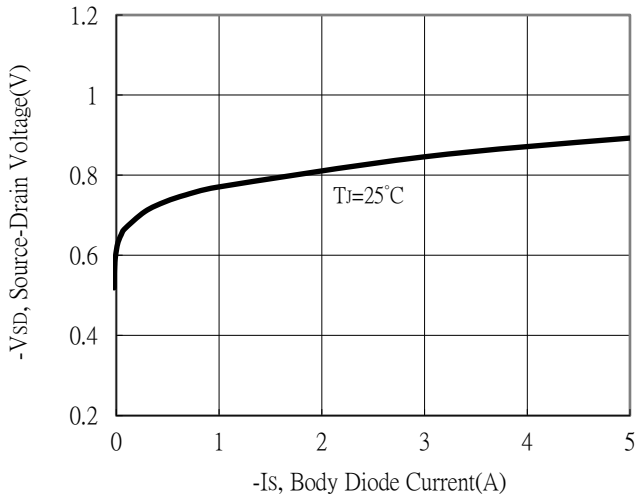


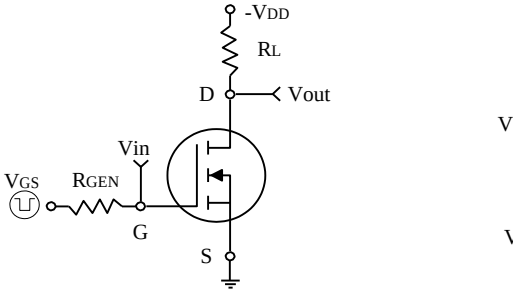


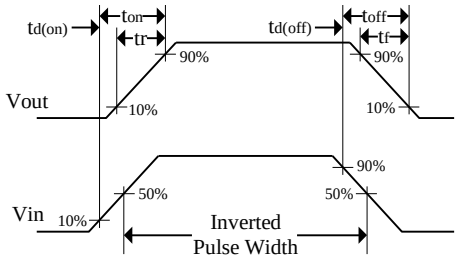
Gate Charge



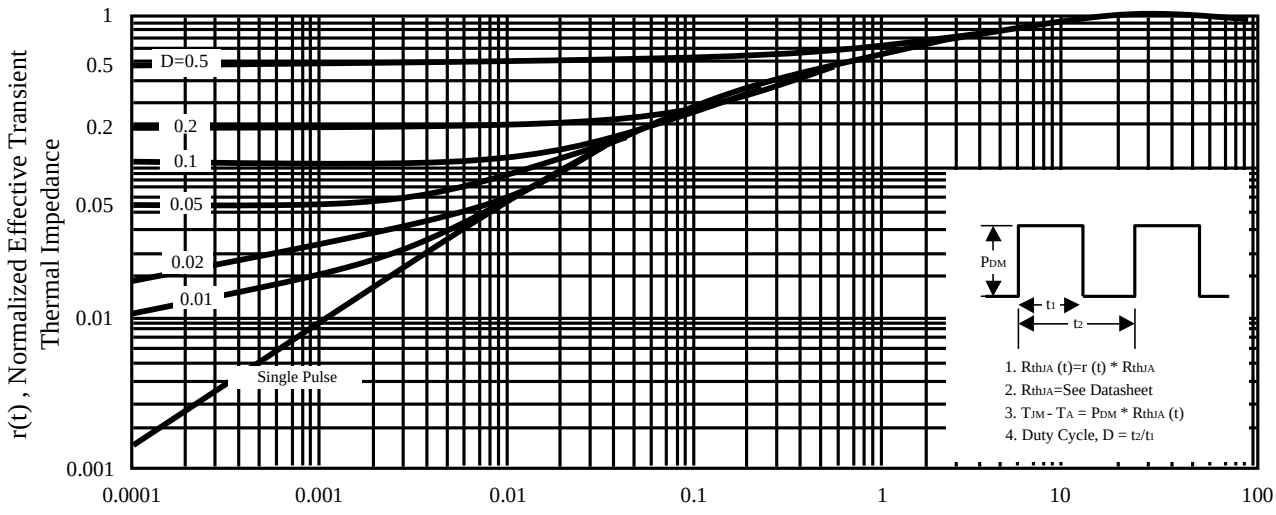
Maximum Safe Operating Area







Switching Test Circuit and Switching Waveforms



Square Wave Pulse Duration (sec)

Normalized Thermal Transient Impedance Curve