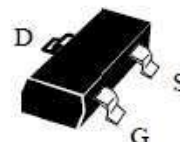


P-Channel High Density Trench MOSFET

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	$R_{DS(on)}$ (m Ω) Max
-30V	- 3.7A	70 @ $V_{GS} = -10V$
	- 3.0A	95 @ $V_{GS} = -4.5V$

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	- 30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^a @ $T_A = 25^\circ C$ -Pulse ^b	I_D	- 3.7	A
	I_{DM}	- 14	A
Drain-Source Diode Forward Current ^a	I_S	- 1.9	A
Maximum Power Dissipation ^a	P_D	$T_A=25^\circ C$	1.25
		$T_A=75^\circ C$	0.75
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to 150	$^\circ C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R_{thJA}	100	$^\circ C/W$
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Note :

a. Surface Mounted on FR4 Board , $t \leq 5sec$.

b. Pulse width limited by maximum junction temperature .

ELECTRICAL CHARACTERISTICS (TA=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} = -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	-3	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = -10V , I _D = -3.7A		56	70	mΩ
		V _{GS} = -4.5V , I _D = -3.0A		73	95	
Forward Transconductance	g _{fs}	V _{DS} = -15V , I _D = -3.5A		10.2		S
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V , I _S = -1.9A			-1.3	V
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} = -15V , V _{GS} = 0V f = 1.0MHz		490		pF
Output Capacitance	C _{OSS}			66		pF
Reverse Transfer Capacitance	C _{RSS}			53		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = -15V , I _D = -1A V _{GEN} = -10V		4.4		ns
Rise Time	t _r			2.2		ns
Turn-Off Delay Time	t _{D(OFF)}	R _L = 15 Ω R _{GEN} = 6 Ω		22		ns
Fall Time	t _f			4.2		ns
Total Gate Charge	Q _g	V _{DS} = -15V I _D = -1A V _{GS} = -10V		10		nC
Gate-Source Charge	Q _{gs}			1.5		nC
Gate-Drain Charge	Q _{gd}			1.4		nC

Note :

b. Pulse Test : Pulse width ≤ 300us , Duty Cycle ≤ 2% .

c. Guaranteed by design , not subject to production testing .

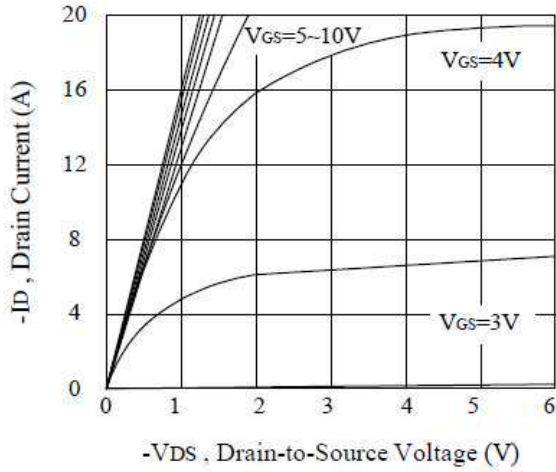


Figure 1. Output Characteristics

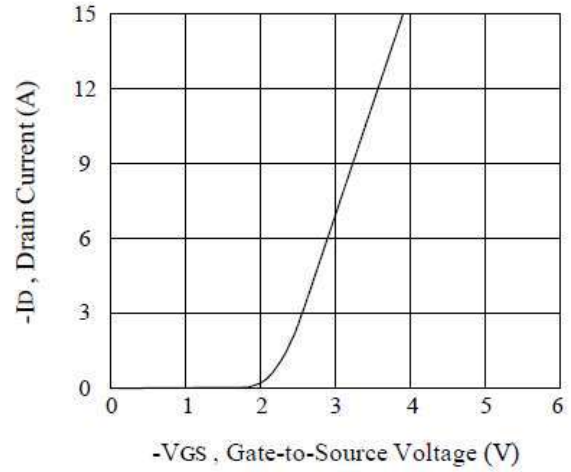


Figure 2. Transfer Characteristics

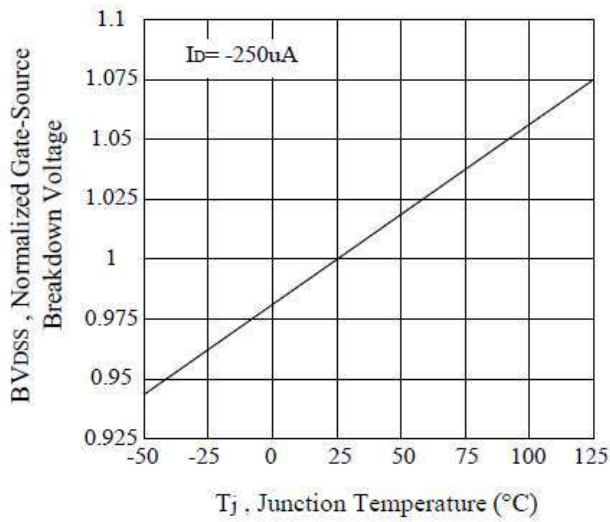


Figure 3. Breakdown Voltage Variation with Temperature

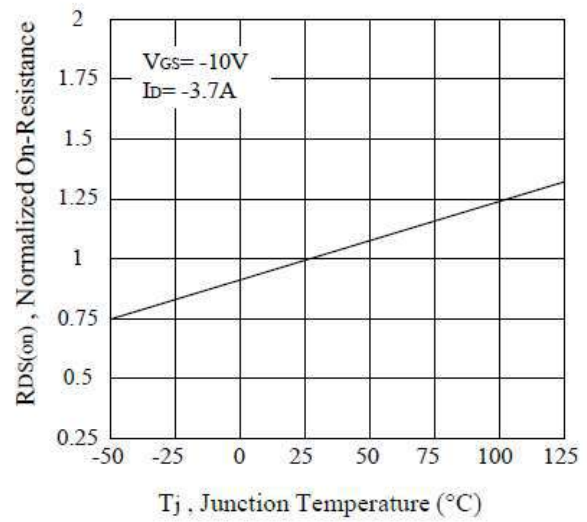


Figure 4. On-Resistance Variation with Temperature

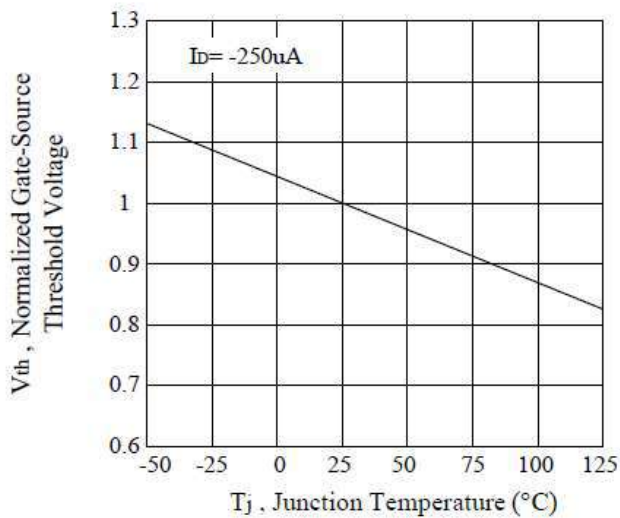


Figure 5. Gate Threshold Variation with Temperature

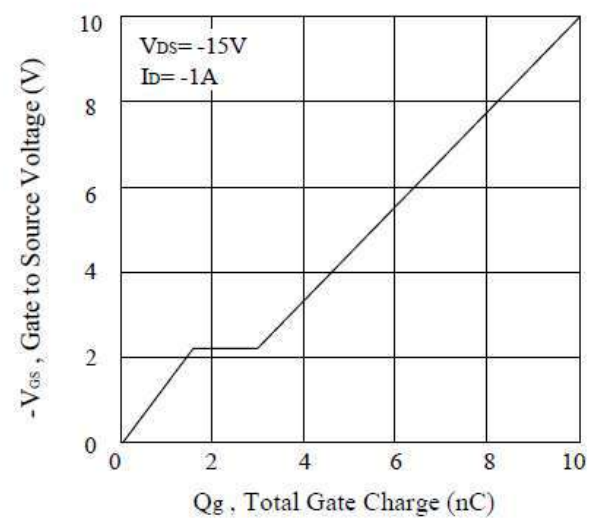
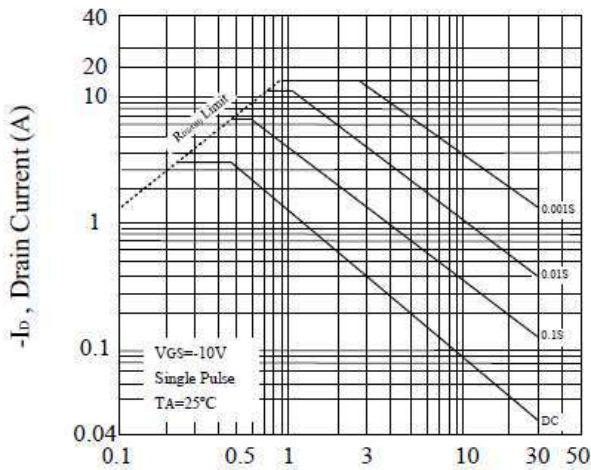
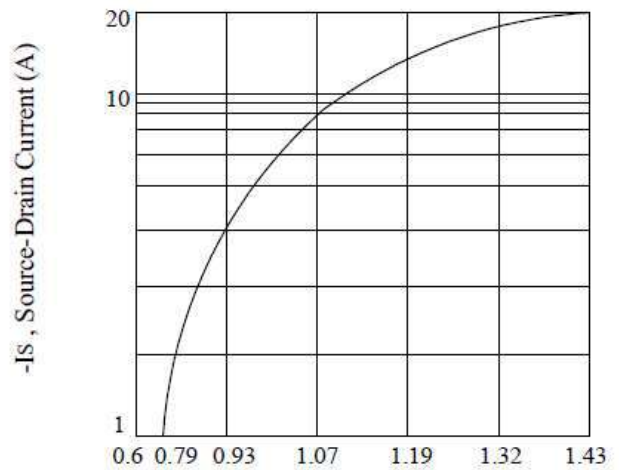


Figure 6. Gate Charge



-VDS, Drain-Source Voltage (V)
 Figure 7. Maximum Safe Operating Area



-VSD, Body Diode Forward Voltage (V)
 Figure 1. Body Diode Forward Voltage Variation with Source Current

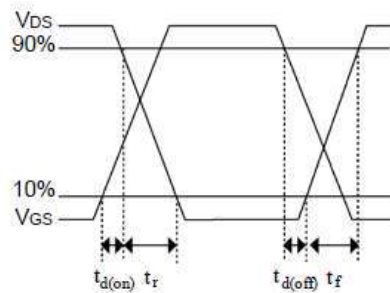
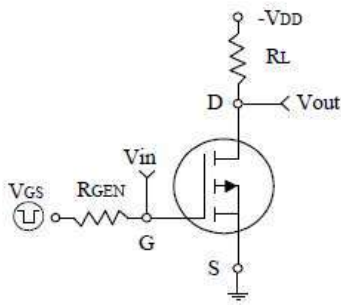


Figure 9. Switching Test Circuit and Switching Waveforms

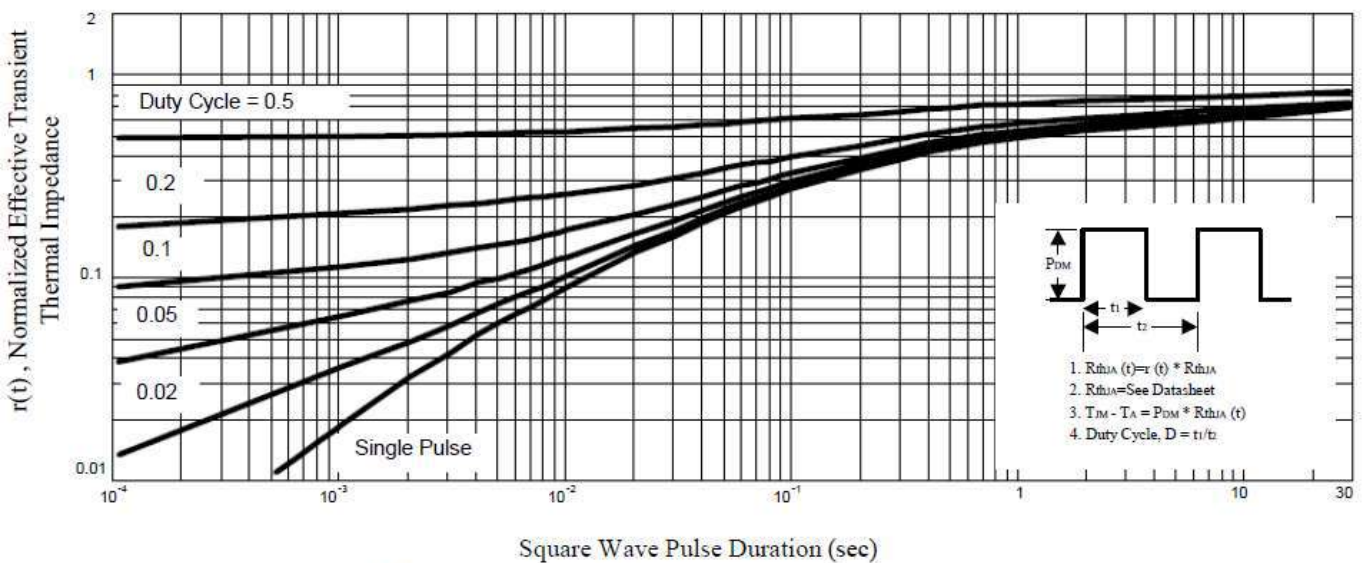


Figure 10. Normalized Thermal Transient Impedance Curve