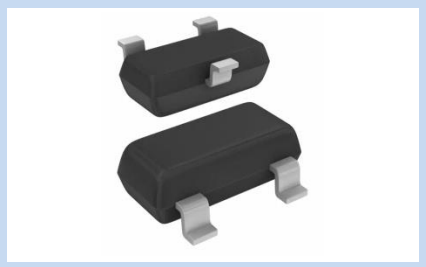
P-Channel MOSFET
80V 1.9A SOT-23 ESD

MFT8P1A9S23E

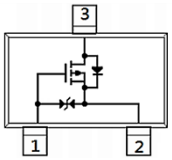
MERITEK

FEATURE



- $R_{DS(ON)}$≤135mΩ, V_{GS}= -10V
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- ESD Protected Gate and Fast Switching Characteristic
- Green Device Available

MECHANICAL DATA



RoHS

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

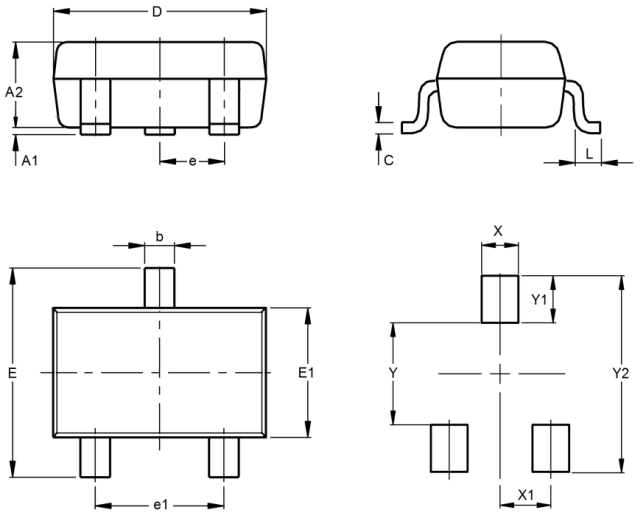
MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-80	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	-1.9	A
		-1.5	
Pulsed Drain Current	I_{DM}	-7.5	
Continuous Body Diode Forward Current	I_s	-1.9	
Power Dissipation	P_D	0.95	W
		0.60	
Thermal Maximum, Junction to Ambient	$R_{\theta JA}$	132	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	- 55 to + 150	°C

Note:
1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR FR-4 board with 2 oz. copper, in a still air environment with $T(T_A$=25°C).
2. The power dissipation $P(P_D)$ is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C.
3. The value in any given application depends on the user's specific board design. Surface Mounted on FR4 Board, t < 10 sec.
4. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$= 150°C. Ratings are based on low frequency to keep initial $T(T_J$=25°).

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	--	0.10
A2	0.79	1.30
b	0.30	0.50
C	0.08	0.20
D	2.70	3.10
e	0.89	1.02
e1	1.78	2.04
E	2.10	2.80
E1	1.20	1.60
L	0.15	--
X	0.80	
X1	0.95	
Y	1.40	
Y1	1.00	
Y2	3.40	

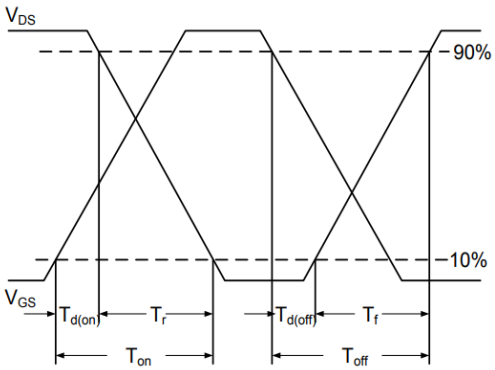


ELECTRICAL CHARACTERISTICS

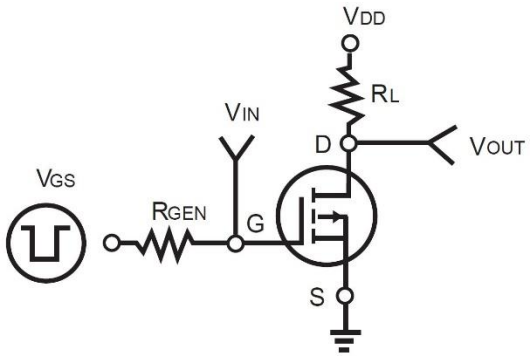
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}= 0V, I_D= -250uA	BV_{DSS}	-80	-	-	V
Forward Transconductance	V_{DS}= -10V, I_D= -3A	G_{FS}	-	6	-	S
Gate-Body Leakage Current	V_{GS}= ±16V, V_{DS}= 0V	I_{GSS}	-	-	±10	μA
Zero Gate Voltage Drain Current	V_{GS}= 0V, V_{DS}= -64V	I_{DSS}	-	-	-1	
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Gate Threshold Voltage	V_{GS}= V_{DS}, I_D= -250uA	$V_{GS(th)}$	-1	-	-2.5	V
Static Drain Source On-Resistance	V_{GS}= -10V, I_D= -1A	$R_{DS(ON)}$	-	104	135	mΩ
	V_{GS}= -4.5V, I_D= -0.5A		-	140	185	
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Input Capacitance	V_{GS}= 0V, V_{DS}= -40V, f= 1MHz	C_{iss}	-	520	-	pF
Output Capacitance		C_{oss}	-	48	-	
Reverse Transfer Capacitance		C_{rss}	-	36	-	
Gate Resistance	f= 1MHz	R_g	-	7	-	Ω
Total Gate Charge	V_{GS}= -5V, V_{DS}= -40V, I_D= -1A	Q_g	-	7.4	-	nC
Gate-Source Charge		Q_{gs}	-	2.2	-	
Gate-Drain Charge		Q_{gd}	-	3.2	-	
Turn-On Delay Time	V_{GS}= -10V, V_{DS}= -40V, I_D= -1A, R_{GS}= 10Ω	$t_{d(on)}$	-	7.4	-	ns
Turn-On Rise Time		t_r	-	17	-	
Turn-Off Delay Time		$t_{d(off)}$	-	36	-	
Turn-Off Fall Time		t_f	-	25	-	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	V_{GS}= 0V, I_S= -1A	V_{SD}	-	-0.8	-1.2	V
Reverse Recovery Time	I_F= -1A, dI_F/dt= 100A/us	trr	-	14	-	ns
Reverse Recovery Charge		Qrr	-	9.5	-	nC

Note:
1. Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%.
2. Independent of operating temperature.

Switching Time Waveform

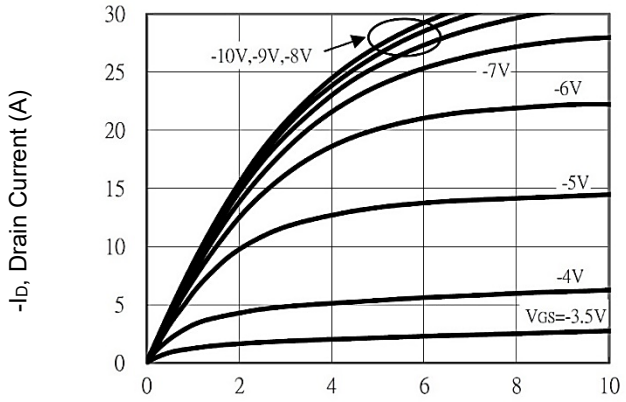


Switching Test Circuit

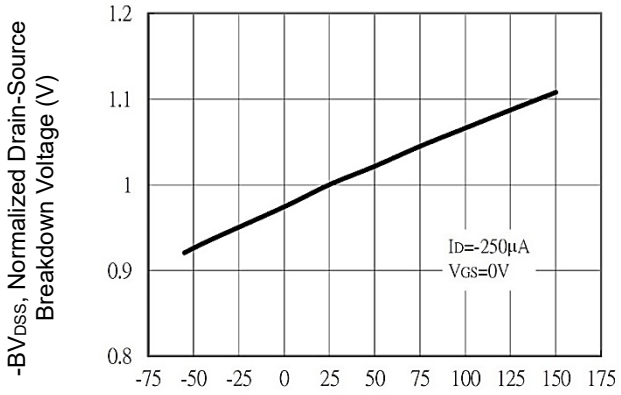


CHARACTERISTIC CURVES

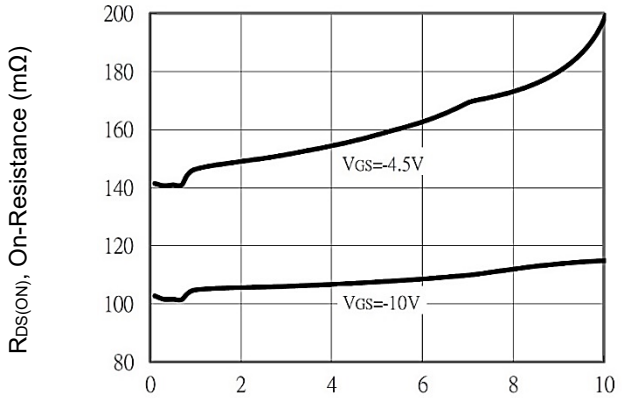
Typical Output Characteristics



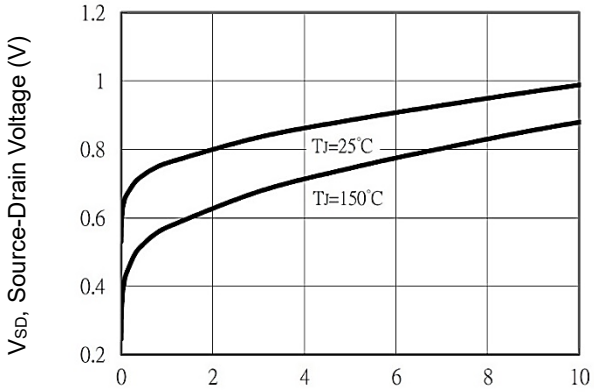
Breakdown Voltage vs. Ambient Temperature



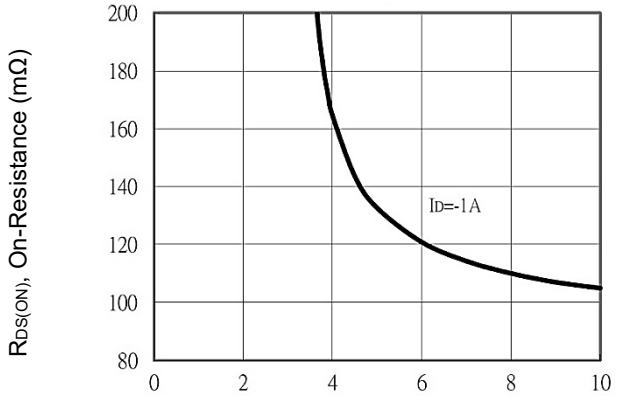
Static Drain-Source On-State Resistance v.s. Drain Current



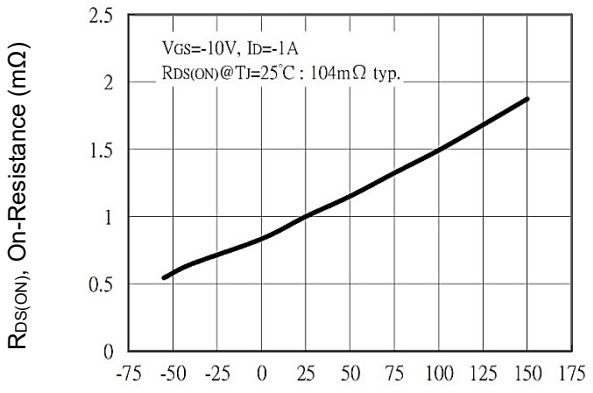
Body Diode Current vs. Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

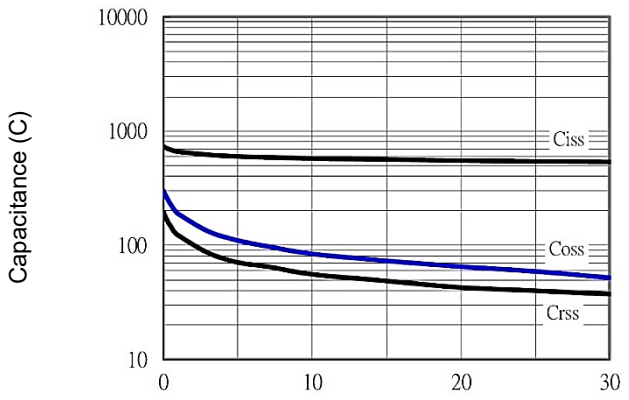


Drain-Source On-State Resistance v.s. Junction Temperature

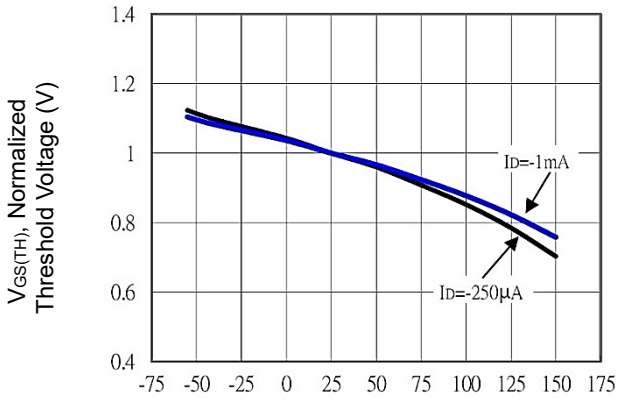


CHARACTERISTIC CURVES

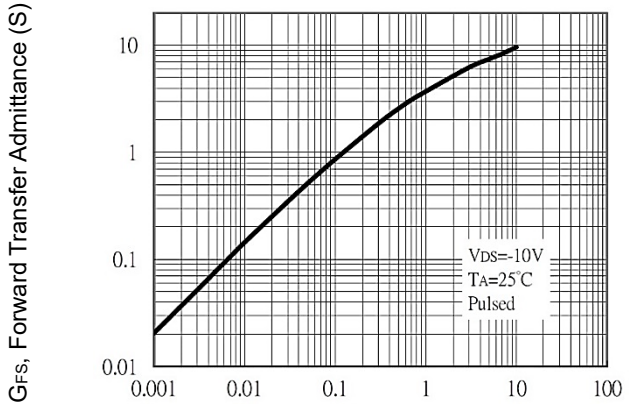
Capacitance vs Drain Drain-to-Source Voltage



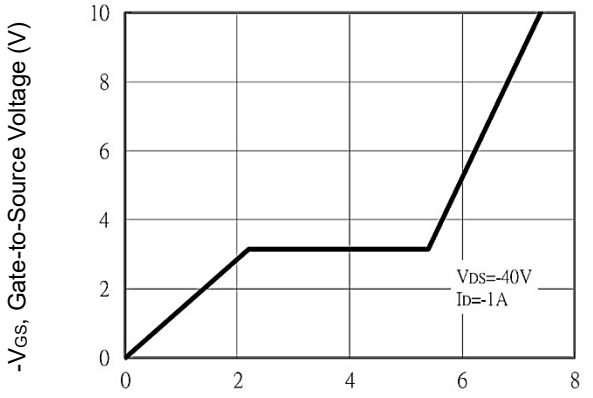
Threshold Voltage vs. Junction Temperature



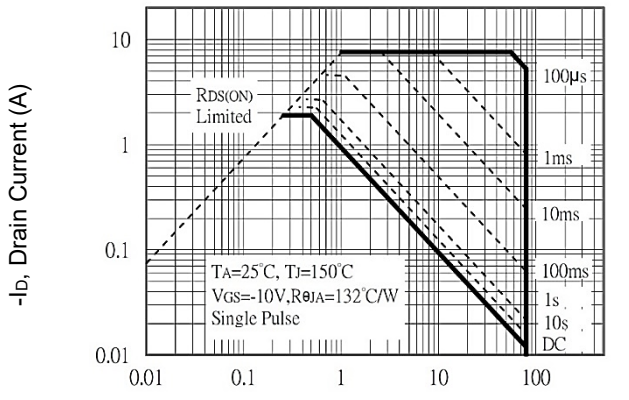
Forward Transfer Admittance vs. Drain Current



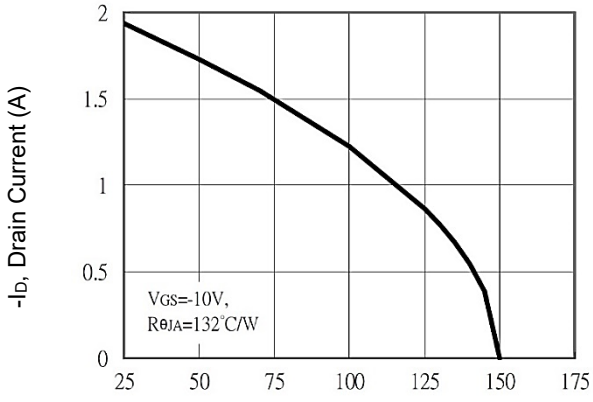
Gate-Charge Characteristics



Safe Operation Area

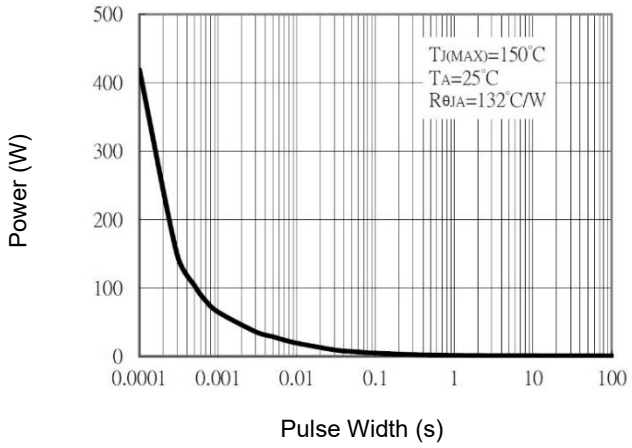


Maximum Drain Current vs. Junction Temperature



CHARACTERISTIC CURVES

Single Pulse Power Rating, Junction to Ambient



Normalized Thermal Transient Impedance Curve