N-Channel MOSFET
100V 70A 62.5W PPAK5X6

MFT10N70P56

MERITEK

FEATURE

- Operating temperature: -55 ~ +150 °C
- $R_{DS(ON)}$=7.2mΩ at V_{GS}=10V
- $R_{DS(ON)}$=10.5mΩ at V_{GS}=4.5V
- Super high dense cell design for extremely low RDS(ON)
- High power and current handing capability
- Improved dv/dt capability

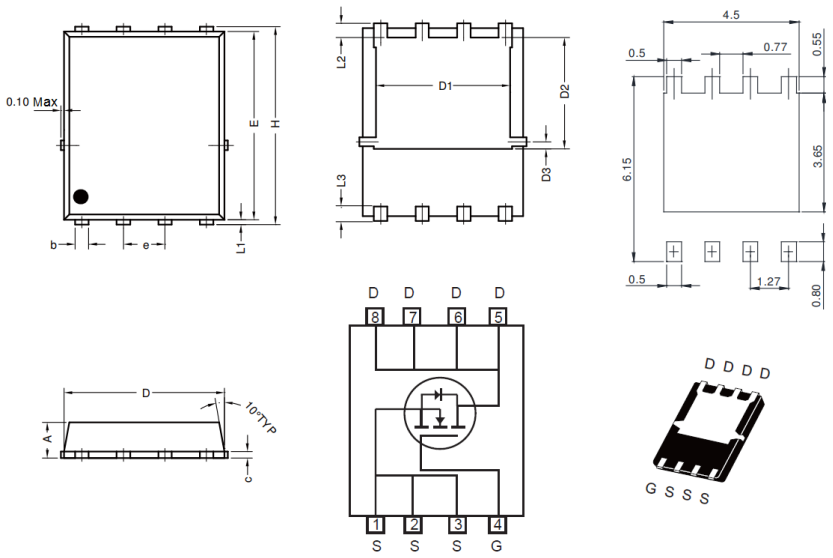
RoHS

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	Junction to Ambien $R_{\theta JA}$	I_D	22	A
	Junction to Case $R_{\theta JC}$	I_D	70	A
Drain Current – Pulsed	Junction to Ambien $R_{\theta JA}$	I_{DM}	88	A
	Junction to Case $R_{\theta JC}$	I_{DM}	280	A
Maximum Power Dissipation		P_D	62.5	W
Single Pulsed Avalanche Energy		E_{AS}	200	mJ
Single Pulsed Avalanche Current		I_{AS}	20	A
Operating and Storage Temperature		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance, Junction to Case		$R_{\theta JC}$	2	°C/W
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	20	°C/W

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.80	1.17
b	0.34	0.49
c	0.20	0.34
D	4.80	5.10
D1	3.80	4.20
D2	3.18	3.78
D3	0.15	0.36
E	5.65	5.90
e	1.27TYP	
H	5.90	6.15
L1	0.05	0.25
L2	0.38	0.62
L3	0.38	0.80

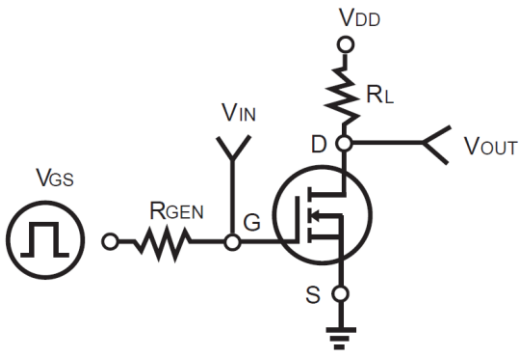


ELECTRICAL CHARACTERISTICS

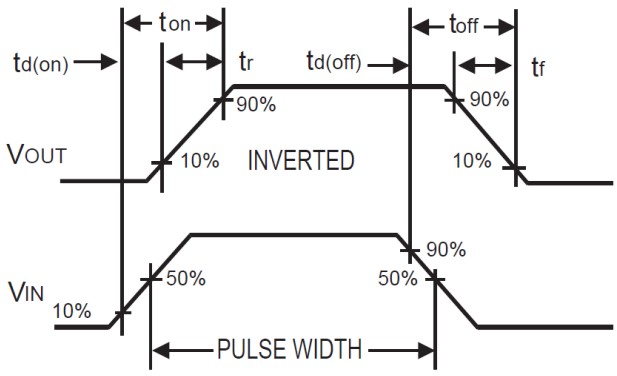
Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	BV_{DSS}	100	--	--	V
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	1	--	3	V
Gate Leakage Current, Forward	V_{DS}=0V , V_{GS}=20V	I_{GSSF}	--	--	100	nA
Gate Leakage Current, Reverse	V_{DS}=0V , V_{GS}=-20V	I_{GSSR}	--	--	-100	
Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	$R_{DS(ON)}$	--	6.0	7.2	Ω
Drain-Source On-Resistance	V_{GS}=4.5V , I_D=10A	$R_{DS(ON)}$	--	8.3	10.5	Ω
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=80V, V_{GS}=4.5V, I_D=20A	Q_g	--	22	--	nC
Gate-Source Charge		Q_{gs}	--	5	--	
Gate-Drain Charge		Q_{gd}	--	14	--	
Turn-On Delay Time	V_{DD}=80V,R_{GEN}=6Ω I_D≡20A,V_{GS}=10V	$T_{d(on)}$	--	17	--	nS
Turn-On Rise Time		T_r	--	9	--	
Turn-Off Delay Time		$T_{d(off)}$	--	54	--	
Turn-Off Fall Time		T_f	--	15	--	
Input Capacitance	V_{DS}=50V, V_{GS}=0V f=1.0MHz	C_{iss}	--	1895	--	pF
Output Capacitance		C_{oss}	--	405	--	
Reverse Transfer Capacitance		C_{rss}	--	20	--	
Drain-Source Diode Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	40	A
Drain-Source Diode Forward Voltage	I_S=1A,V_{GS}=0V	V_{SD}	--	--	1.5	V

Note:
1. TC = 25 °C unless otherwise specified
2. Repetitive Rating, Pulse width limited by maximum junction temperature
3. Surface mounted on FR4 board, t<10 Sec
4. Pulse Test: Pulse Width≤300μS, Duty Cycle≤2%

Switching Test Circuit

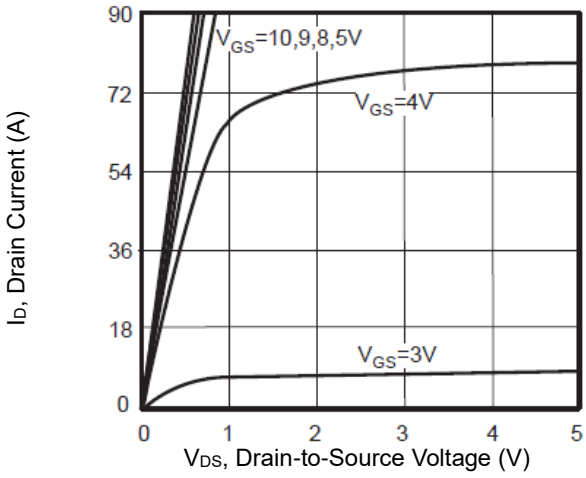


Switching Waveforms

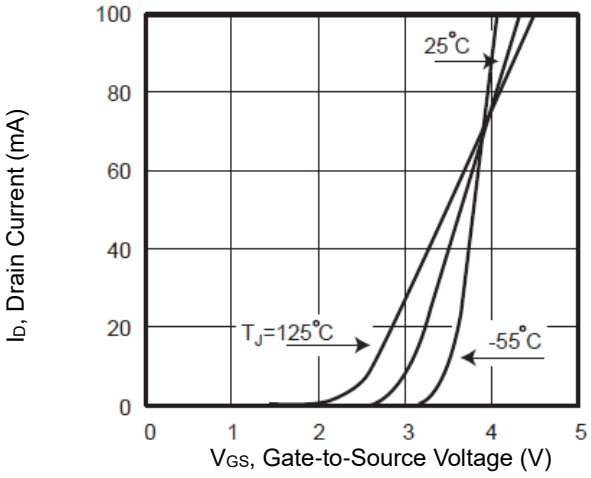


CHARACTERISTIC CURVES

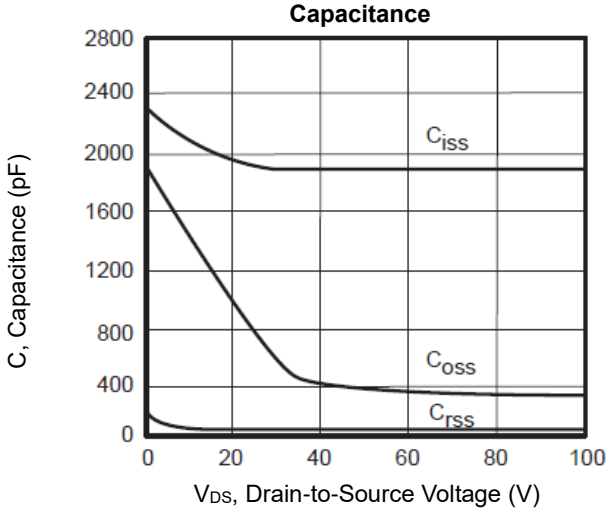
Output Characteristics



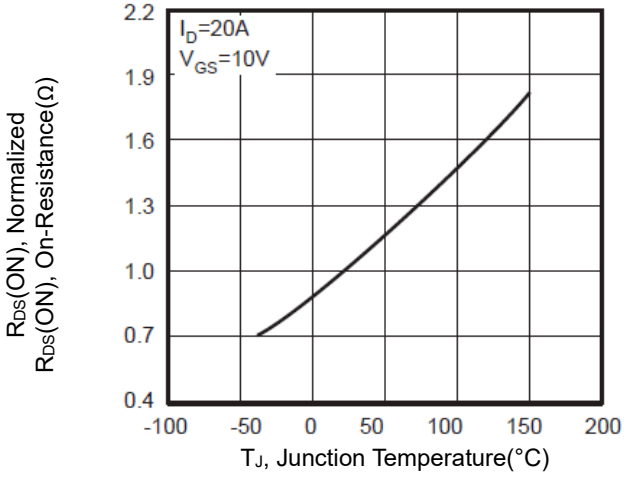
Transfer Characteristics



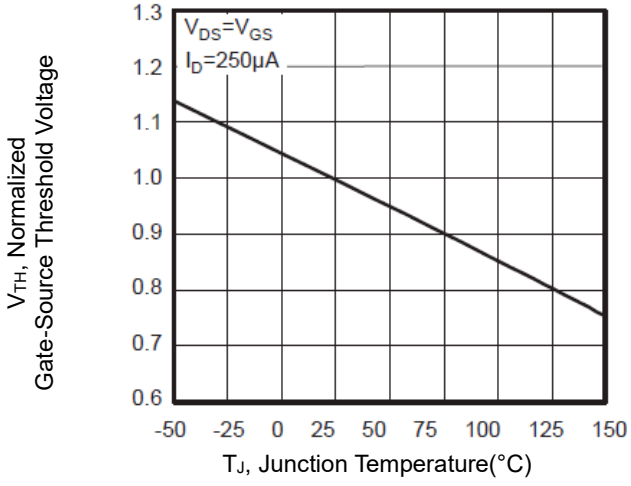
Capacitance



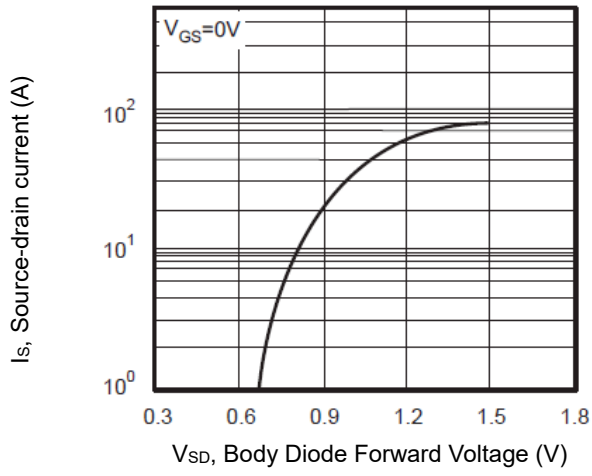
On-Resistance Variation with Temperature



Gate Threshold Variation with Temperature

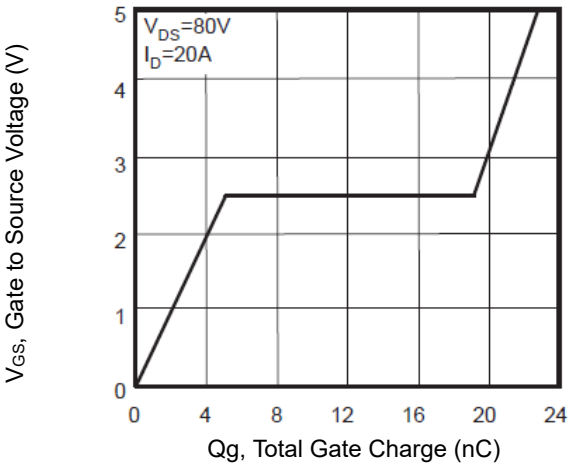


Body Diode Forward Voltage Variation with Source Current

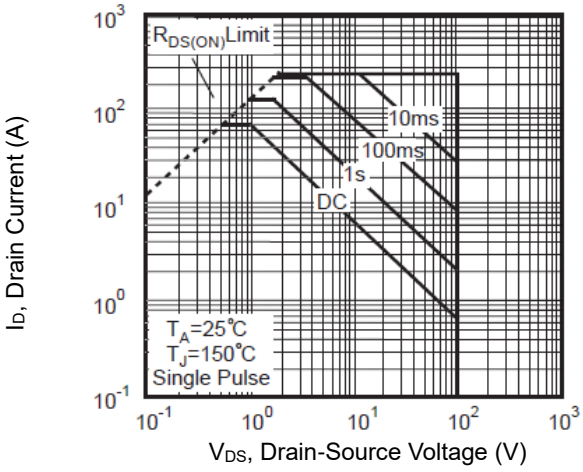


CHARACTERISTIC CURVES

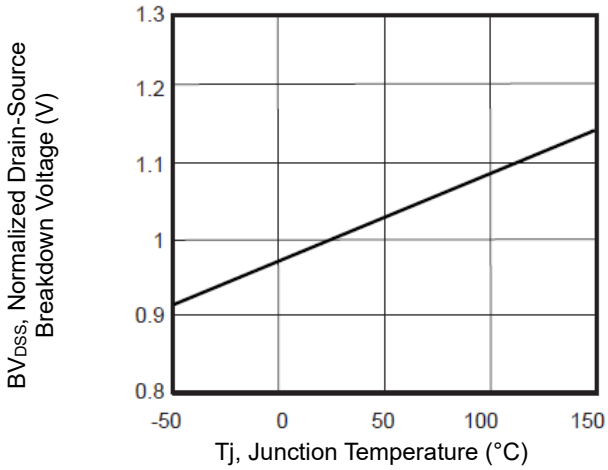
Gate Charge



Maximum Safe Operating Area



Breakdown Voltage Variation Vs Temperature



Normalized Thermal Transient Impedance Curve, Junction-to-Ambient