

N-Channel MOSFET

100V 70A 62.5W DFN5X6

MFT10N70D56

MERITEK

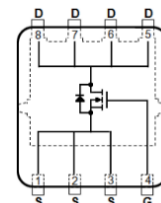
FEATURE

- $R_{DS(ON)} < 7.2m\Omega$, $V_{GS}=10V$, $I_D=20A$
- $R_{DS(ON)} < 10.5m\Omega$, $V_{GS}=4.5V$, $I_D=10A$
- High Power and Current Handling Capability
- Super High Dense Cell Design For Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

- Case: Molded Plastic, DFN5060 Package
- Terminal: Solderable per MIL-STD-750, Method 2026

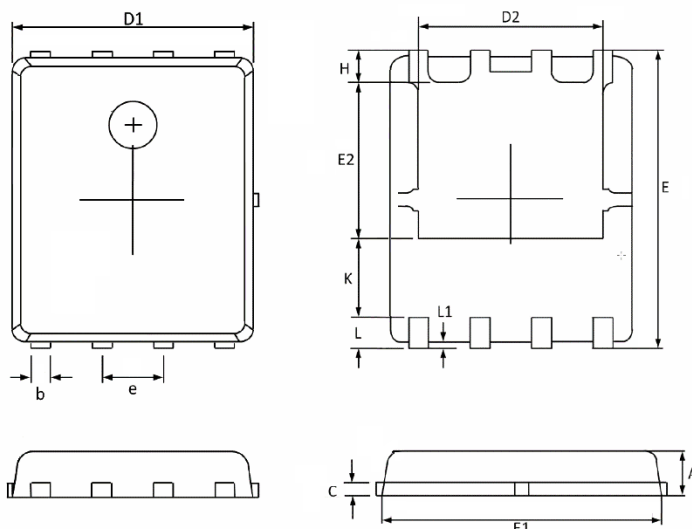


MAXIMUM RATINGS

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

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.80	1.10
b	0.33	0.51
C	0.20	0.30
D1	4.80	5.10
D2	3.61	4.10
E	5.90	6.20
E1	5.70	5.90
E2	3.35	3.78
e	1.27BSC	
H	0.41	0.70
K	1.10	1.50
L	0.51	0.71
L1	0.06	0.20



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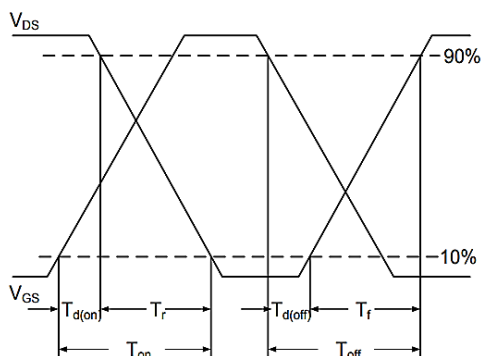
ELECTRICAL CHARACTERISTICS

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

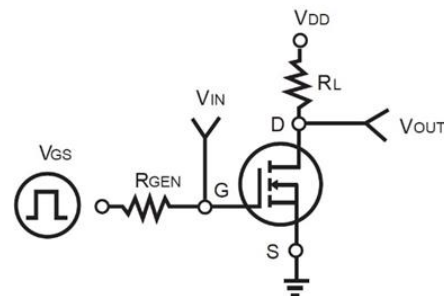
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
4. Guaranteed by design, not subject to production testing
5. $L = 1mH, I_{AS} = 20A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^\circ C$

Switching Time Waveform

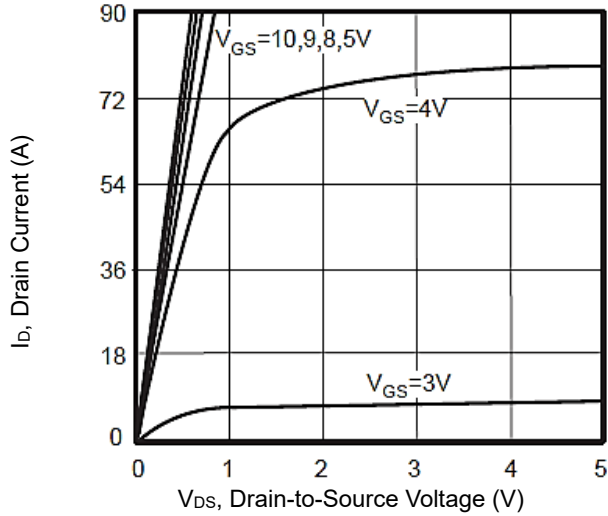


Switching Test Circuit

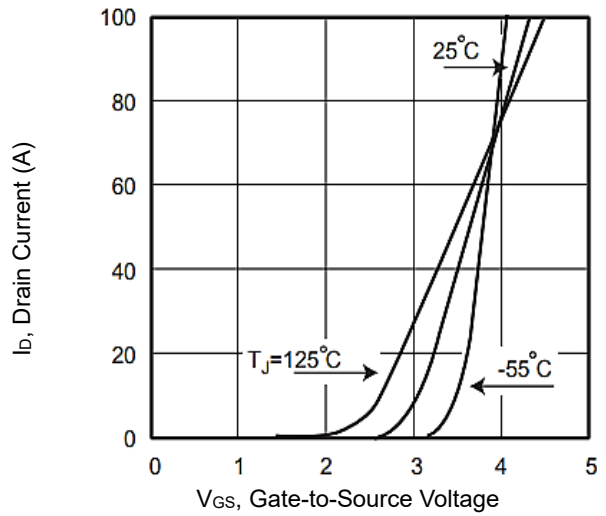


CHARACTERISTICS CURVES

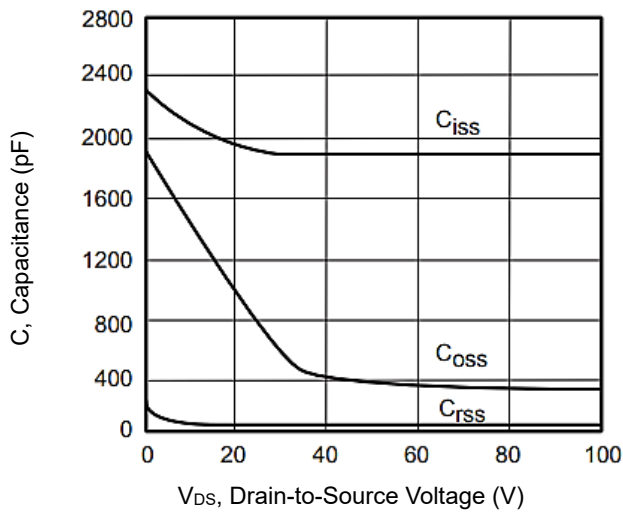
Output Characteristics



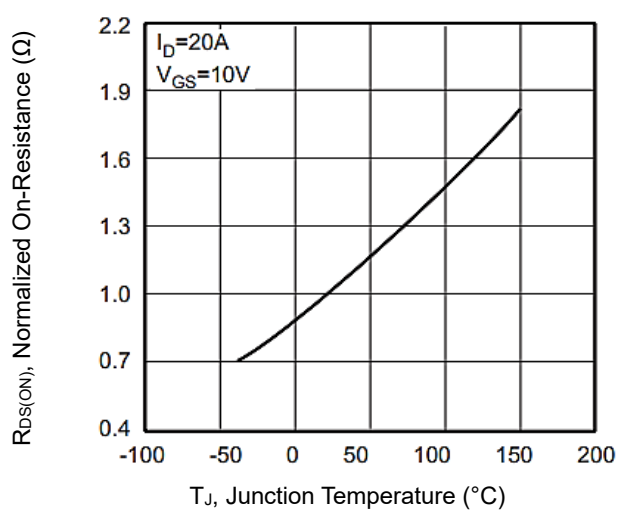
Transfer Characteristics



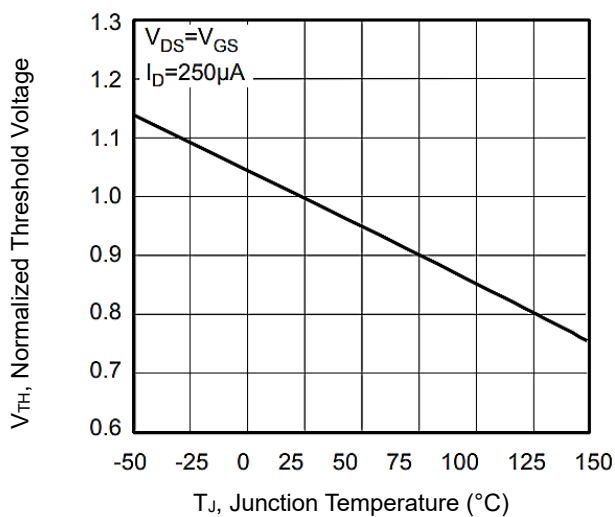
Capacitance



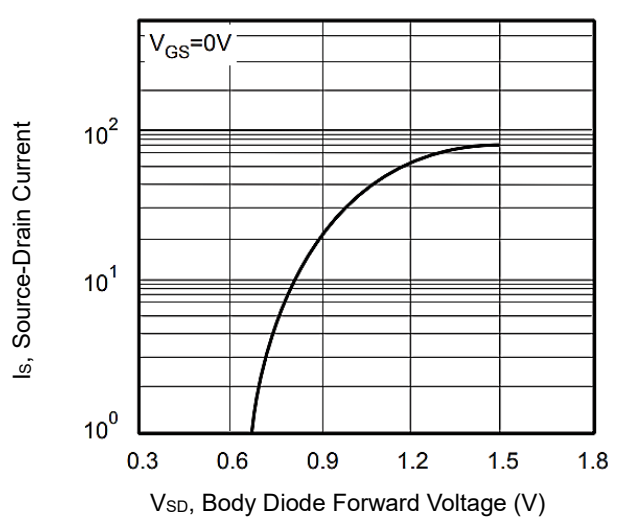
On-Resistance Variation with Temperature



Gate Threshold Voltage with Temperature

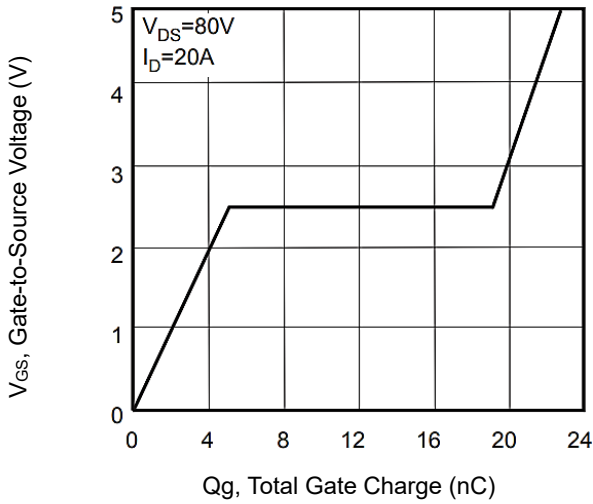


Body Diode Characteristics

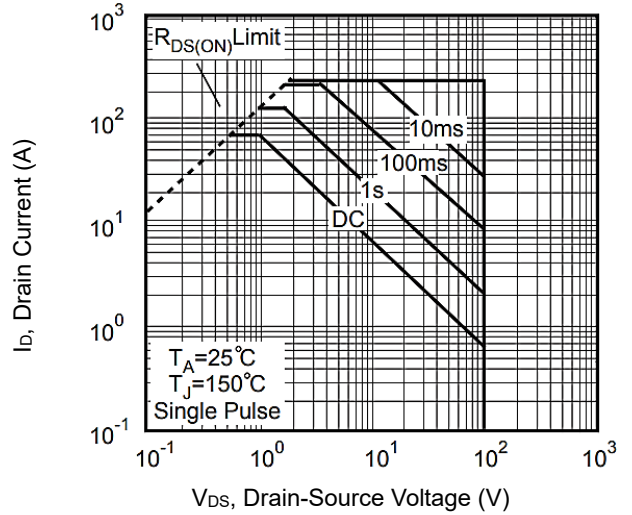


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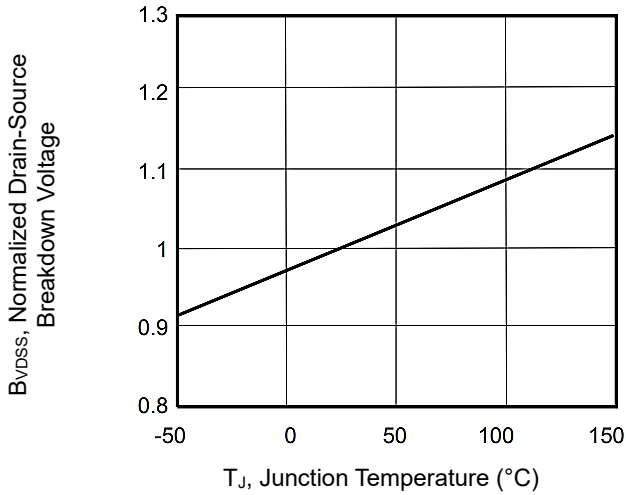
Gate Charge



Maximum Safe Operating Area



Breakdown Voltage Variation with Temperature



Transient Thermal Response Curves

