

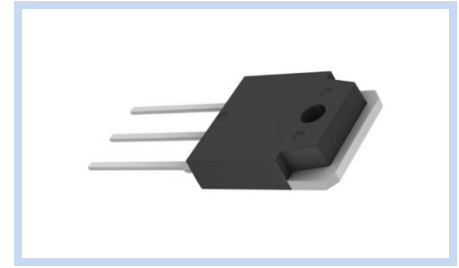
N-Channel MOSFET

100V 150A 250W TO-3P

MFT10P150T3P	MERITEK
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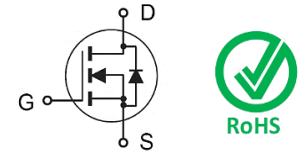
FEATURE

- $R_{DS(ON)} < 7.8m\Omega$ at $V_{GS}=10V, I_D=35A$
- High Power and Current Handling Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

- Case: TO-3P Package
- Terminals: Solderable per MIL-STD-750, Method 2026

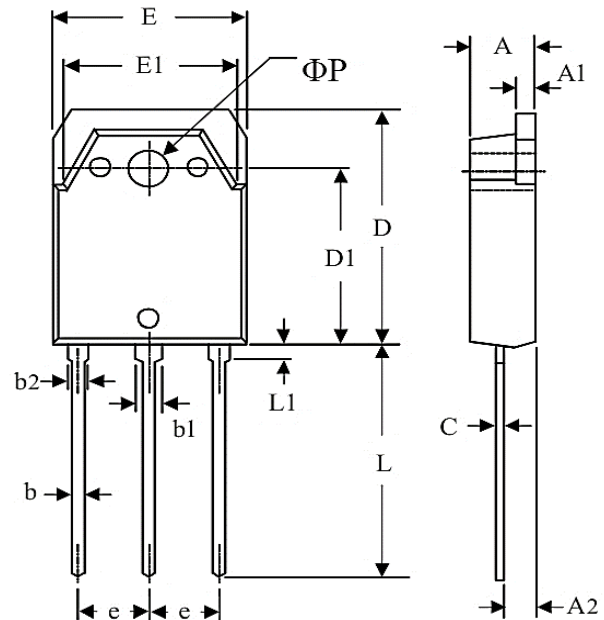


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous	I_D	$T_C=25^\circ C$	150
		$T_C=100^\circ C$	95
Drain Current – Pulsed	I_{DM}	600	A
Power Dissipation	P_D	$T_C=25^\circ C$	250
		Derate above $25^\circ C$	2
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.5	$^\circ C/W$
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to 150	$^\circ C$

DIMENSIONS

TO-3P	Min. (mm)	Max. (mm)
A	4.50	5.10
A1	1.40	1.80
A2	2.20	2.60
b	0.80	1.20
b1	2.80	3.20
b2	1.80	2.20
C	0.50	0.70
D	19.20	20.30
D1	14.20	15.20
E	15.40	15.80
E1	13.40	13.80
e	5.45 BSC	
L	19.80	21.00
L1	3.10	3.85
P	3.20	3.50



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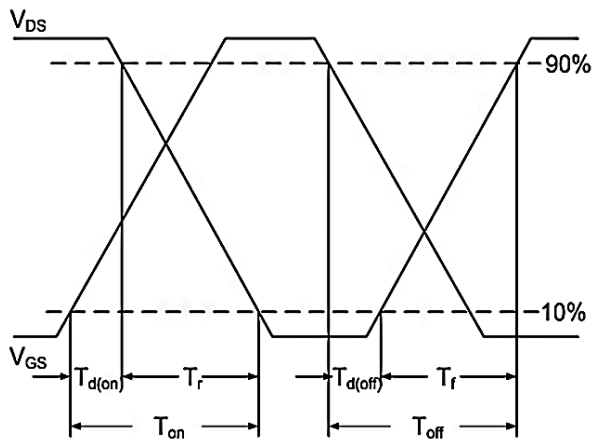
ELECTRICAL CHARACTERISTICS

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-Body Leakage Current, Forward	$V_{GS}=20V, V_{DS}=0V$	I_{GSSF}	--	--	100	nA
Gate-Body 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	$V_{GS}=10V, I_D=35A$	$R_{DS(ON)}$	--	6.4	7.8	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	2	--	4	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=80V, V_{GS}=10V, I_D=70A$	Q_g	--	231	--	nC
Gate-Source Charge		Q_{GS}	--	63	--	
Gate-Drain Charge		Q_{GD}	--	70	--	
Turn-On Delay Time	$V_{DD}=50V, V_{GS}=10V, R_G=2.5\Omega, I_D=70A$	$T_{d(on)}$	--	44	--	ns
Rise Time		T_r	--	23	--	
Turn-Off Delay Time		$T_{d(off)}$	--	98	--	
Fall Time		T_f	--	27	--	
Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=800KHz$	C_{iss}	--	6650	--	pF
Output Capacitance		C_{oss}	--	605	--	
Reverse Transfer Capacitance		C_{rss}	--	495	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	--	--	150	A
Diode Forward Voltage	$V_{GS}=0V, I_S=35A$	V_{SD}	--	--	1.5	V

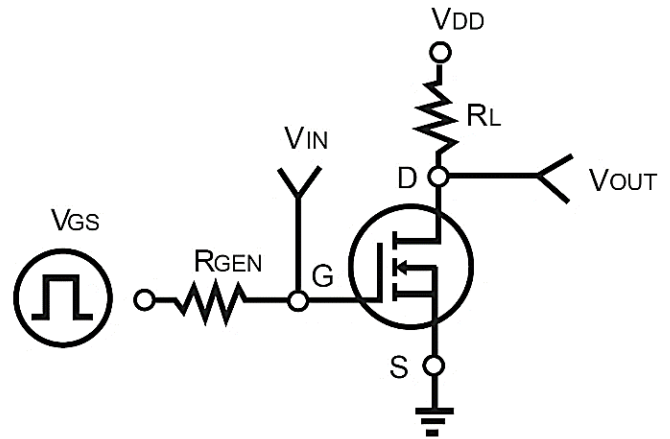
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
3. Guaranteed by design, not subject to production testing.

Switching Time Waveform



Switching Test Circuit



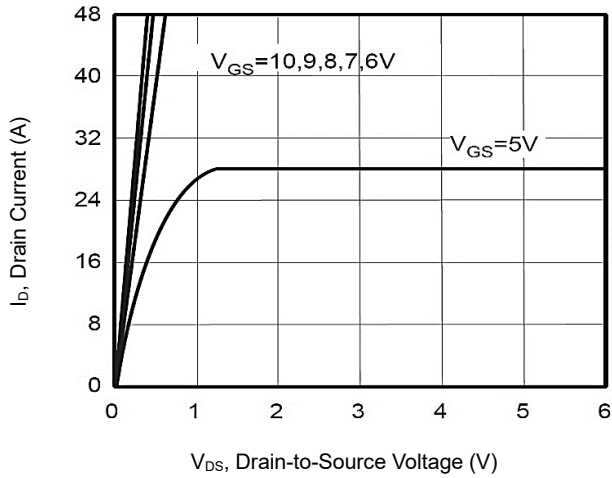
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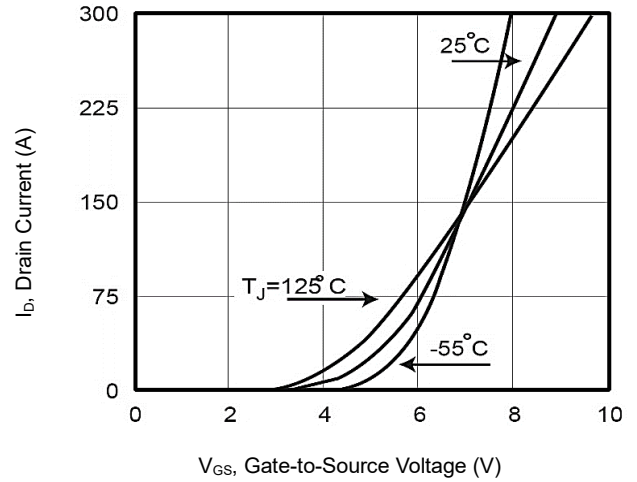
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CHARACTERISTIC CURVES

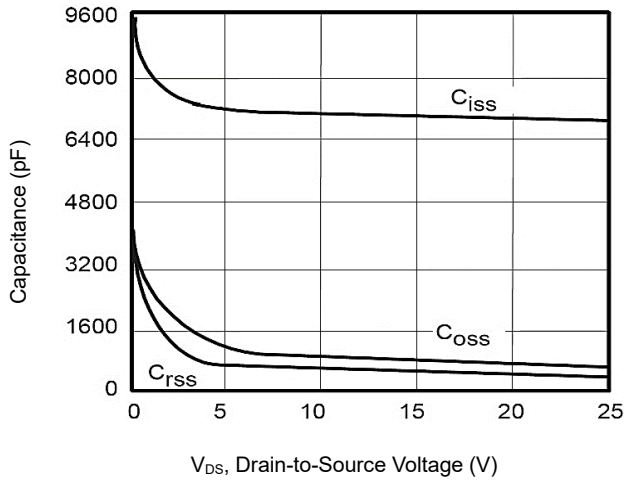
Output Characteristics



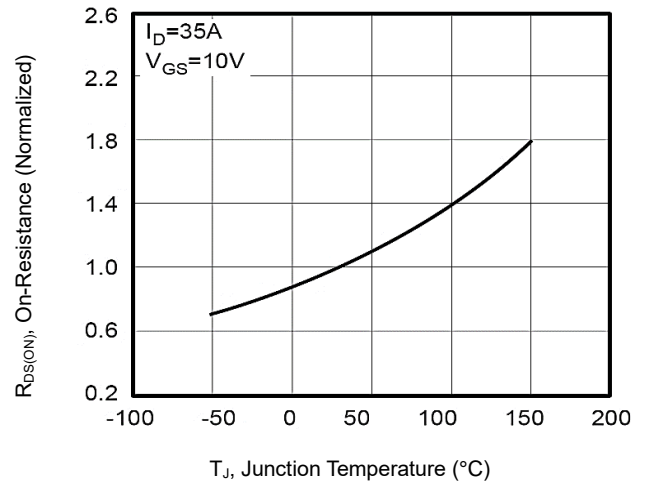
Transfer Characteristics



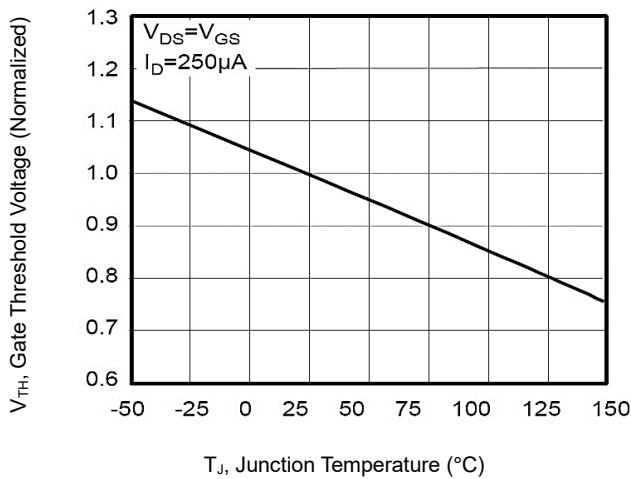
Capacitance vs. Drain-Source Voltage



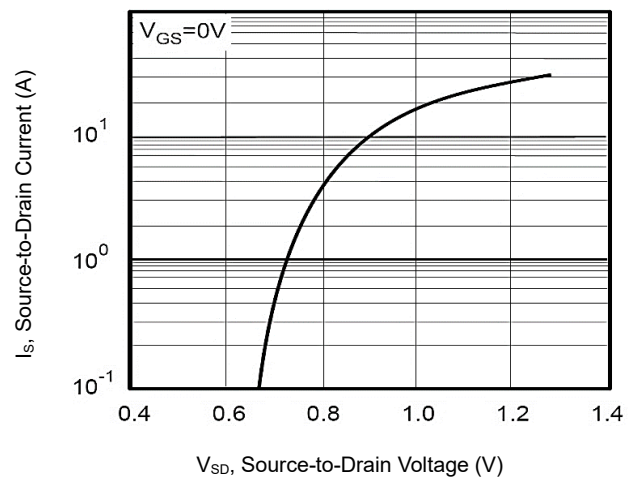
On-Resistance Variation with Temperature



Gate Threshold Variation with Temperature



Body Diode Characteristics



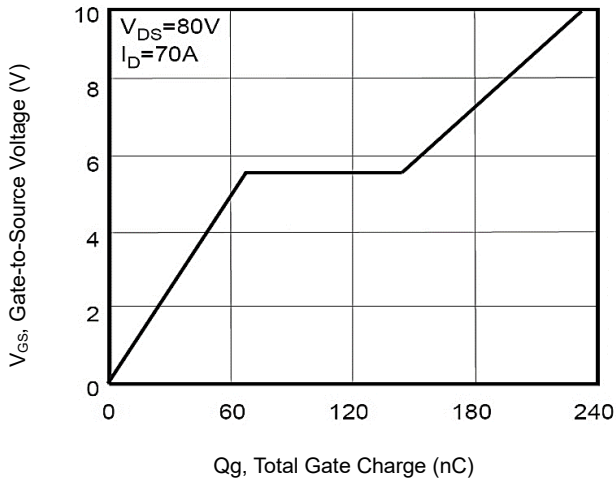
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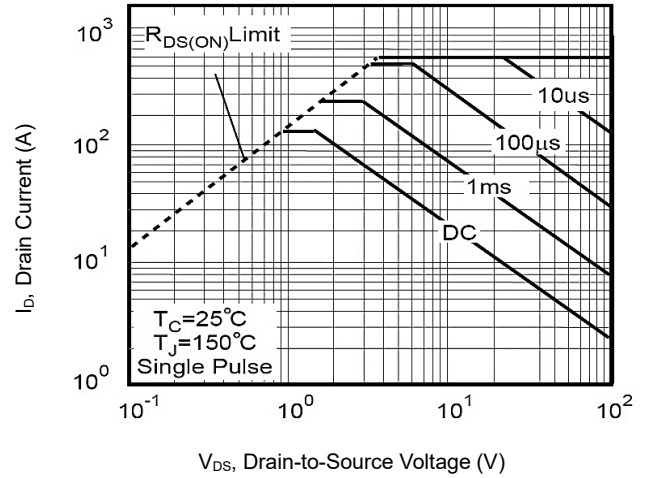
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CHARACTERISTIC CURVES

Gate-Charge Characteristics



Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve

