Features

- Low On-resistance and Low Conduction Loss
- Super Junction technology for High Voltage Application
- Soft Switching with Fast Reverse Recovery Diode
- Ultra Low Gate Charge Cause Lower Driving Requirement
- Low impedance Kelvin source pin-out
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free."Green "Device(Note 1)
- Lead Free Finish/RoHS Compliant. "P" Suffix Designates RoHS Compliant. See Ordering Information

N-CHANNEL Super-Junction Power MOSFET

Maximum Ratings

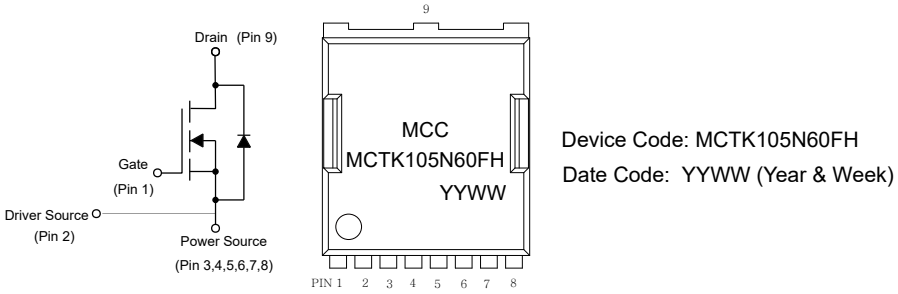
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance Junction to Ambient,Max(Note 2): 60°C/W
- Thermal Resistance Junction to Case,Max : 1.17°C/W

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Volltage		V_{GS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	17.5	A
	T_C=100°C		11	
Pulsed Drain Current(Note 3)		I_{DM}	70	A
Total Power Dissipation, T_C=25°C		P_D	107	W
Single Avalanche Energy(Note 4)		E_{AS}	365	mJ

Note:

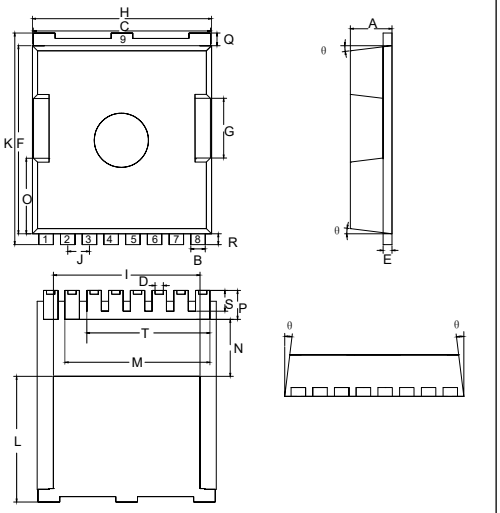
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Device mounted on 1 in^2 FR-4 board with 2oz. single-sided Copper, in a still air environment with TA=25 ℃.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. Starting T_J=25°C, V_{DD}=50V,V_{GS}=10V, I_{AS}=7.8A.

Internal Structure and Marking Code



Device Code: MCTK105N60FH
Date Code: YYWW (Year & Week)

TOLL-8L-KS



DIMENSIONS					
DIM	INCHES		mm		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.028	0.035	0.70	0.90	
C	0.382	0.390	9.70	9.90	
D	0.017	0.020	0.42	0.50	
E	0.016	0.024	0.40	0.60	
F	0.405	0.417	10.28	10.58	
G	0.122	0.138	3.10	3.50	
H	0.382	0.398	9.70	10.10	
I	0.311	0.327	7.90	8.30	
J	0.047		1.20		BSC
K	0.452	0.468	11.48	11.88	
L	0.266	0.281	6.75	7.15	
M	0.315		8.00		
N	0.118	0.130	3.00	3.30	
O	0.157	0.172	3.98	4.38	
P	0.055	0.071	1.40	1.80	
Q	0.024	0.031	0.60	0.80	
R	0.020	0.028	0.50	0.70	
S	0.039	0.051	1.00	1.30	
θ	4°	10°	4°	10°	
T	0.268		6.80		BSC

Electrical Characteristics (T_J = 25℃ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=1mA	600			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V			10	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=2.1mA	3	4.2	5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15.3A		95	114	mΩ
Gate Resistance	R_g	f=1MHz, open drain		1.3		Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=15.3A		0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=400V, I_F=15.3A dI_F/dt=100A/μs		105		ns
Reverse Recovery Charge	Q_{rr}			595		nC
Peak Reverse Recovery Current	I_{rrm}			10		A
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=100V, V_{GS}=0V, f=1MHz		2240		pF
Output Capacitance	C_{oss}			99		
Output capacitance - energy related	$C_{o(er)}$	V_{DS}=0 to 400V, V_{GS}=0V		93		
Output capacitance - time related	$C_{o(tr)}$			598		
Total Gate Charge	Q_g	V_{DS}=400V, V_{GS}=10V, I_D=15.3A		57		nC
Gate-Source Charge	Q_{gs}			15		
Gate-Drain Charge	Q_{gd}			28		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=400V, V_{GS}=10V R_G=10Ω, I_D=15.3A		100		ns
Turn-On Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(off)}$			65		
Turn-Off Fall Time	t_f			22		

Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig. 1 - Typical Output Characteristics(T_j=25°C)

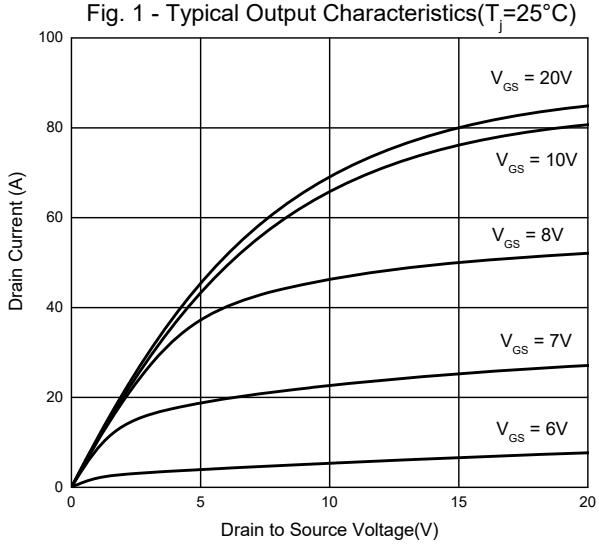


Fig. 2 - Typical Transfer Characteristics

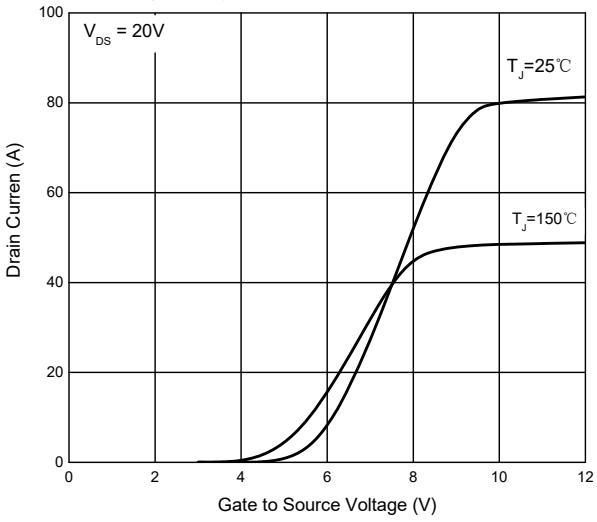


Fig. 3 - On-Resistance vs Gate Bias

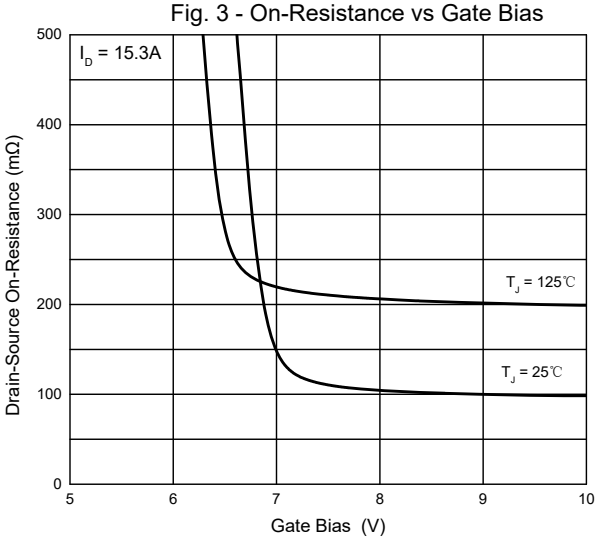


Fig. 4 - On-Resistance vs Drain Current

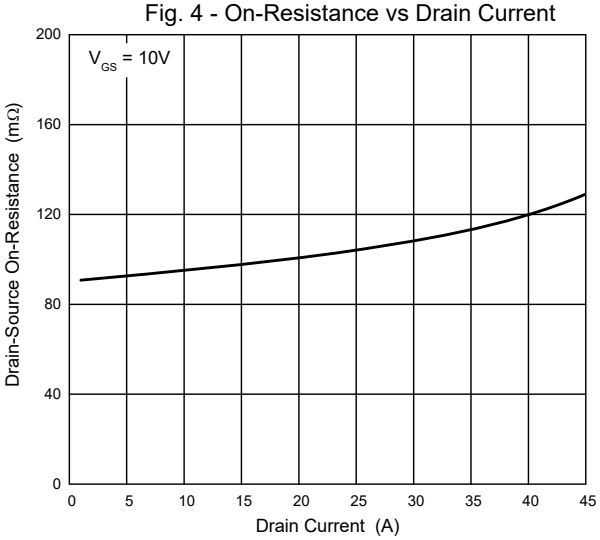


Fig. 5 - Capacitance Characteristice

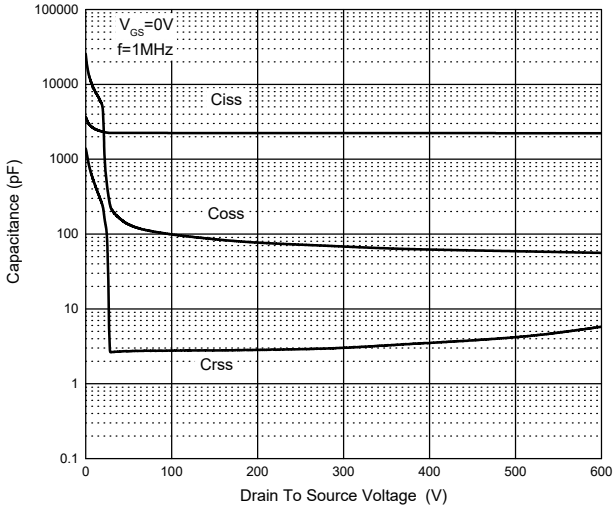
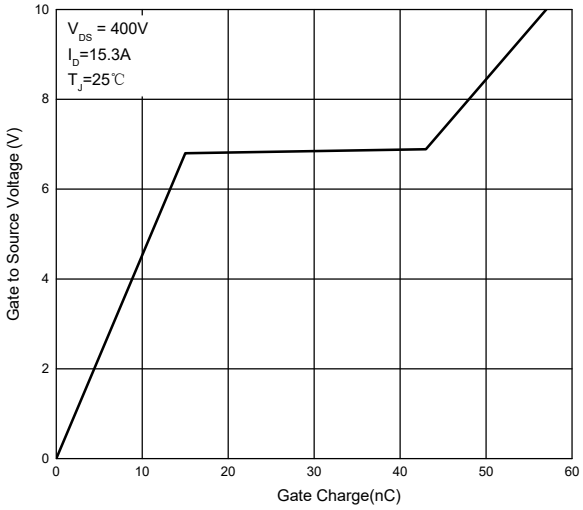


Fig. 6 - Typical Gate Charge



Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig. 7 - Gate-Threshold Voltage vs Junction Temperature

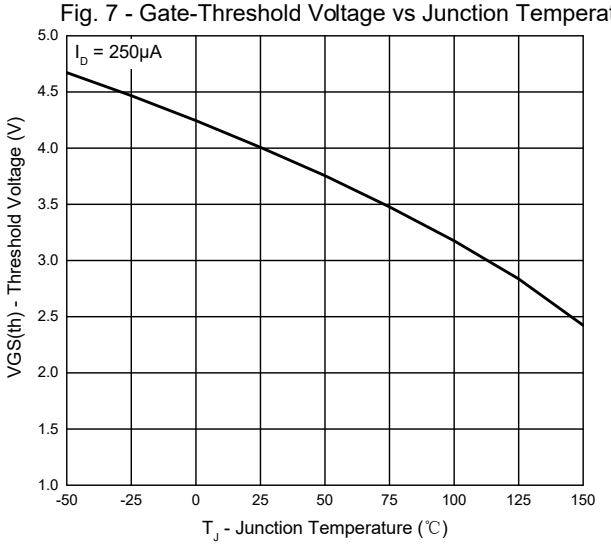


Fig. 8 - Normalized On-Resistance

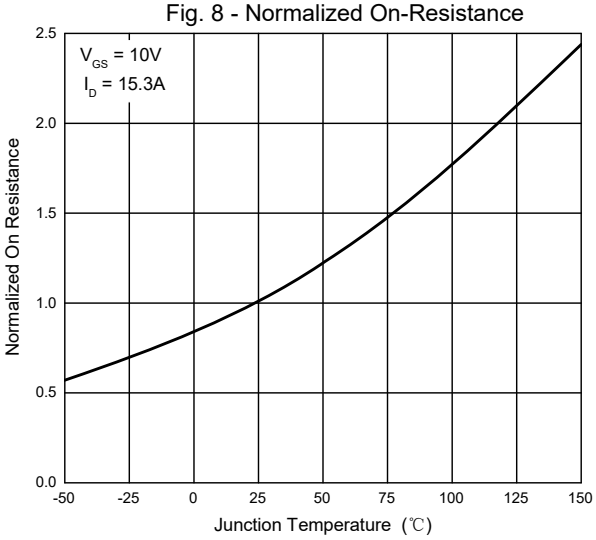


Fig. 9 - Forward Characteristics

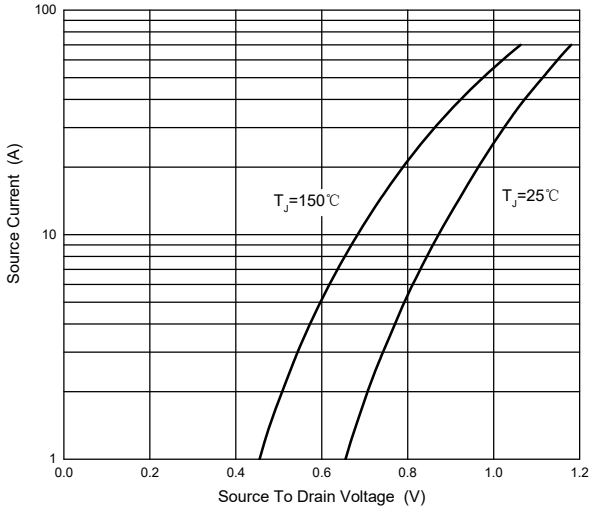


Fig. 10 - Drain Current

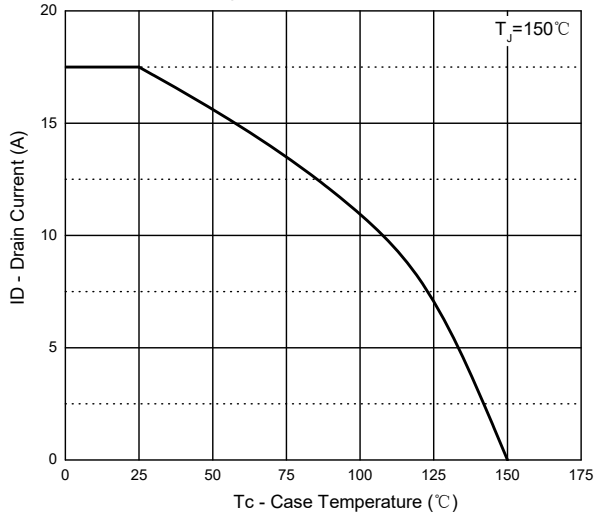


Fig. 11 - Power Dissipation

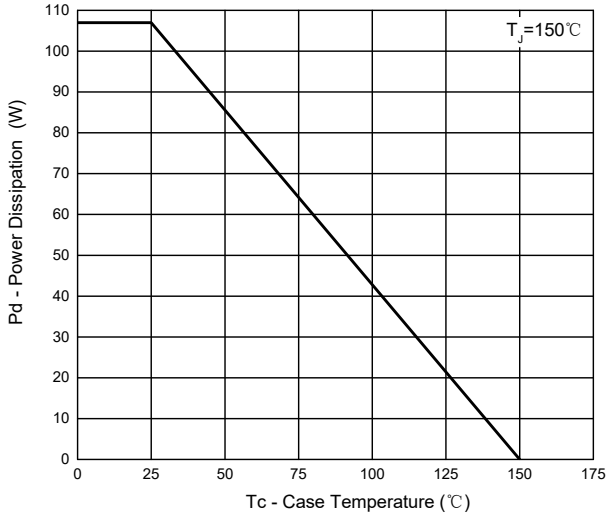
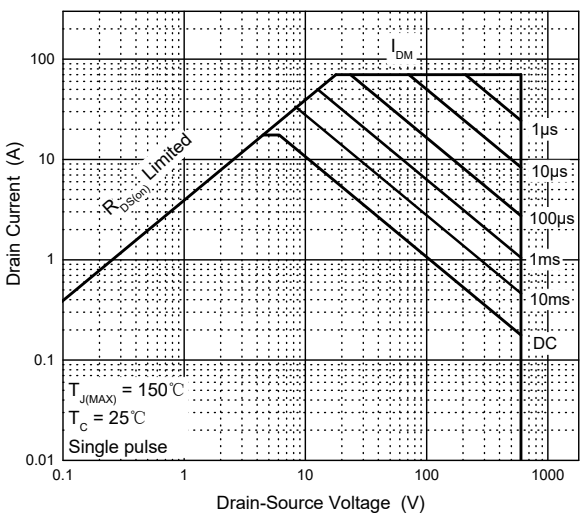
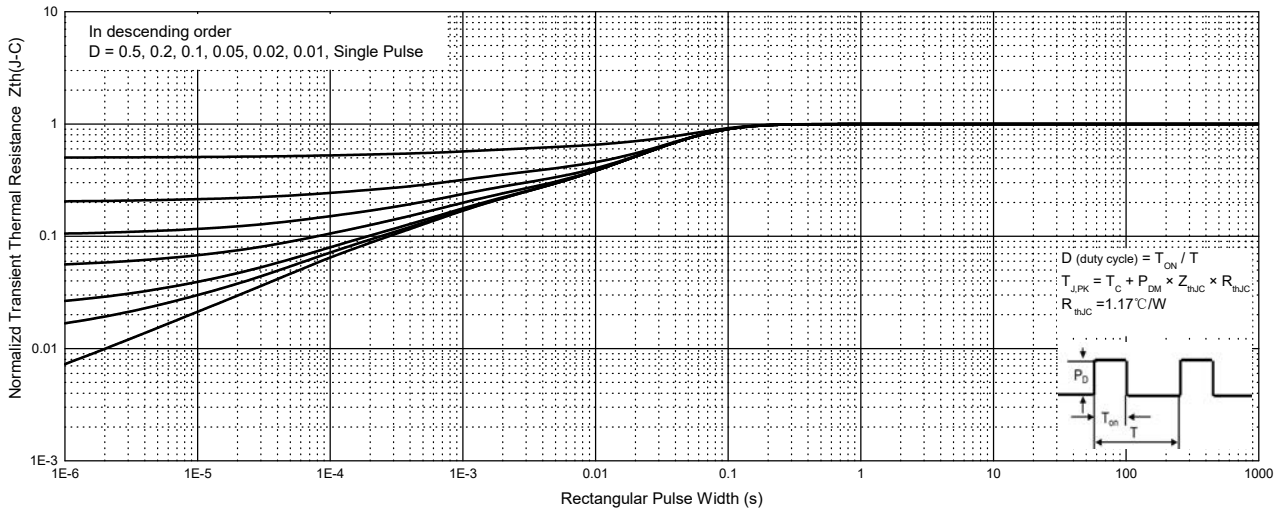


Fig. 12 - Safe Operating Area



Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig.13 - Normalized Transient Thermal Impedance, Junction-Case



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2Kpcs/Reel