

## Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low  $R_{DS(ON)}$
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

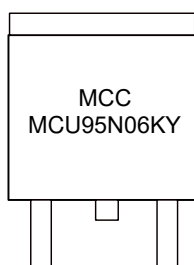
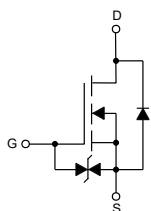
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 71°C/W Junction to Ambient(Steady-State)<sup>(Note2)</sup>
- Thermal Resistance: 0.78°C/W Junction to Case(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	95	A
Pulsed Drain Current <sup>(Note3)</sup>	$I_{DM}$	340	A
Total Power Dissipation	$P_D$	160	W
Single Pulsed Avalanche Energy <sup>(Note4)</sup>	$E_{AS}$	256	mJ

Note:

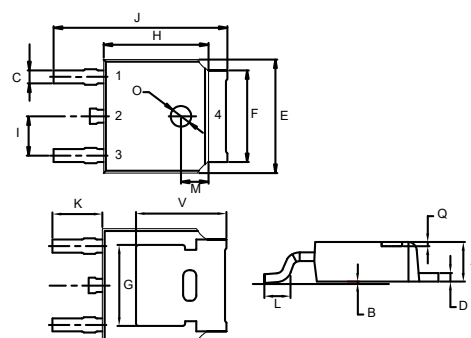
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ . The Power dissipation  $P_{DSM}$  is based on  $R_{\theta JA} t \leq 10\text{s}$  and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $T_J = 25^\circ\text{C}$ ,  $V_{DD} = 50\text{V}$ ,  $L = 0.5\text{mH}$ ,  $I_{AS} = 32\text{A}$

## Internal Structure and Marking Code



# N-CHANNEL MOSFET

## DPAK(TO-252)



1. Gate
- 2,4. Drain
3. Source

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 10$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		3.2	5.5	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$		4.0	7.0	m $\Omega$
Gate Resistance	$R_G$	f=1MHz, Open drain		2.0		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				95	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=10A$		0.77	1.3	V
Reverse Recovery Time	$t_{rr}$	$I_F=20A, dI_F/dt=100A/\mu s$		45.8		ns
Reverse Recovery Charge	$Q_{rr}$			36.9		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		4159		pF
Output Capacitance	$C_{oss}$			821		
Reverse Transfer Capacitance	$C_{riss}$			46		
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=25A$		72.84		nC
Gate-Source Charge	$Q_{gs}$			15.93		
Gate-Drain Charge	$Q_{gd}$			10.41		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=30V, V_{GEN}=10V, R_G=2\Omega, I_{DS}=25A$		12.6		ns
Turn-On Rise Time	$t_r$			46.4		
Turn-Off Delay Time	$t_{d(off)}$			58.8		
Turn-Off Fall Time	$t_f$			83.2		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

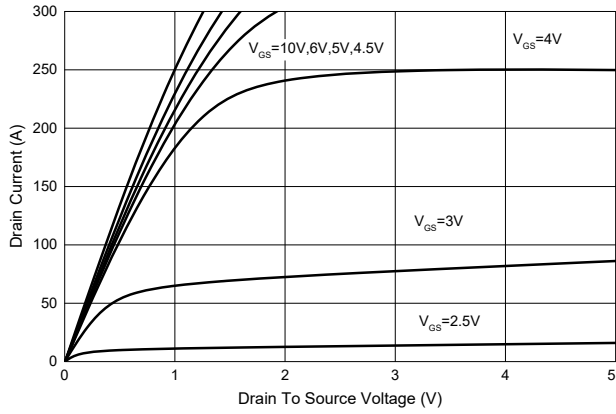


Fig. 2 - Transfer Characteristics

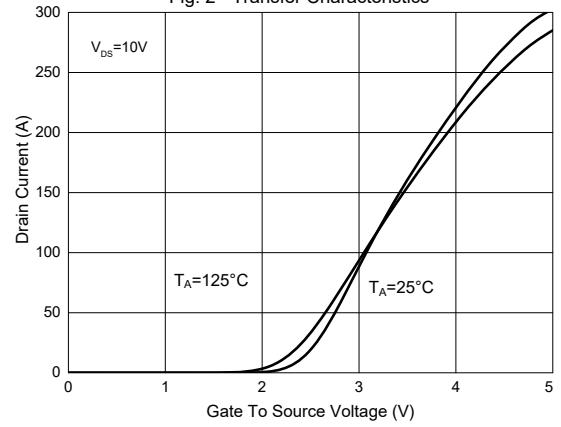


Fig. 3 -  $R_{DS(ON)} - I_D$

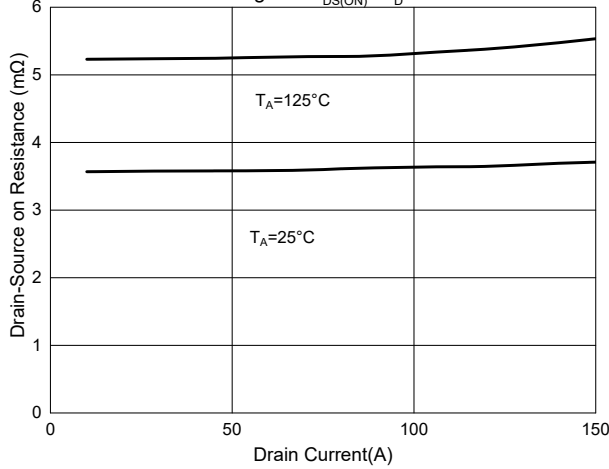


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

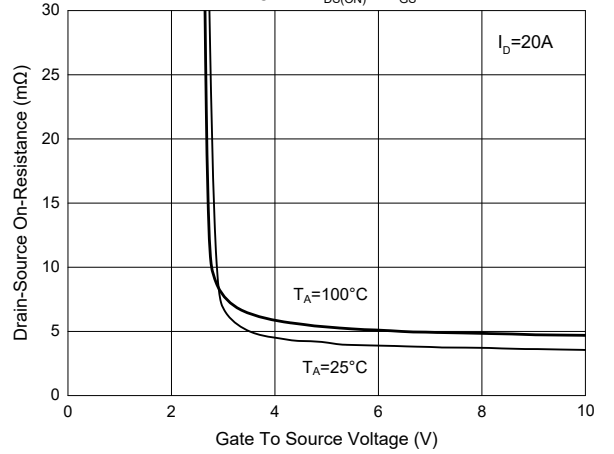


Fig. 5 - Normalized On Resistance Characteristics

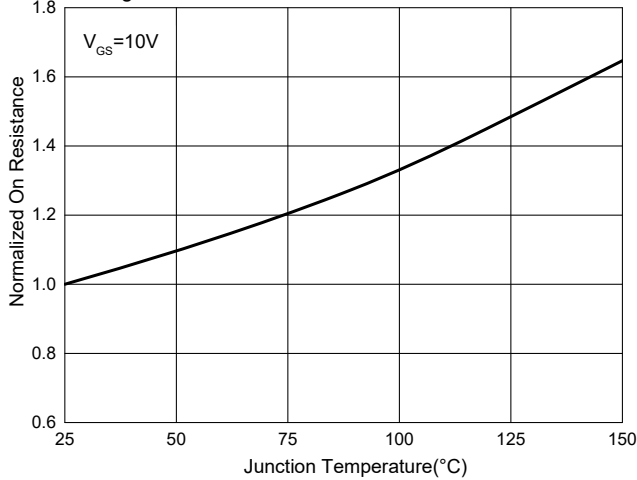
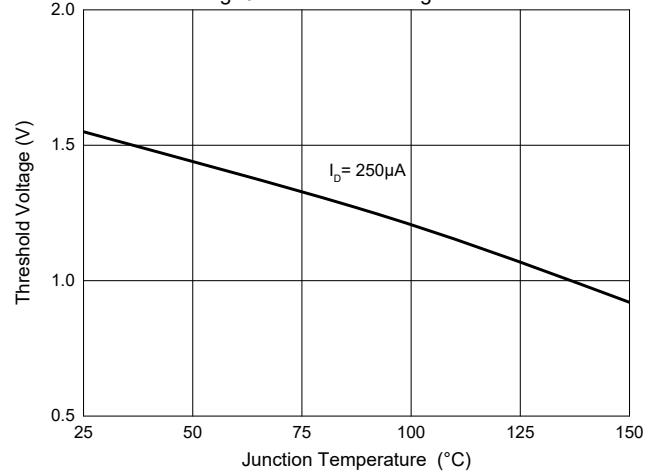
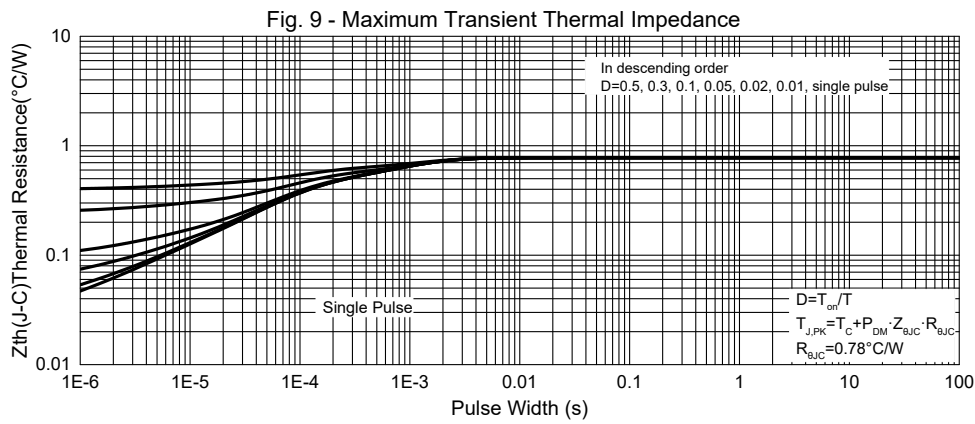
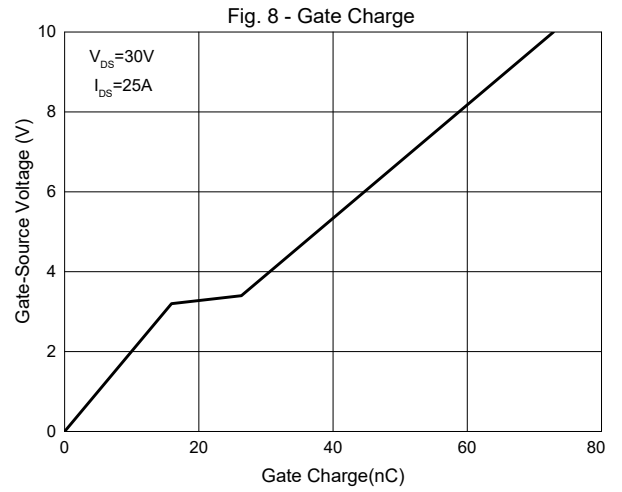
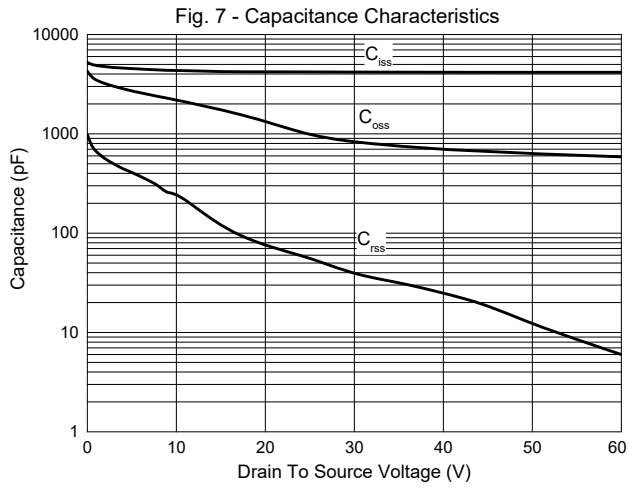


Fig. 6 - Threshold Voltage



## Curve Characteristics



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

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