

## Features

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

## Maximum Ratings

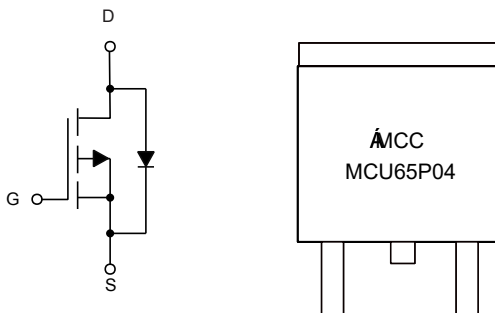
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient<sup>(Note2)</sup>
- Thermal Resistance: 1.3°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	-40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	T <sub>C</sub> =25°C	-65
		T <sub>C</sub> =100°C	-41
Pulsed Drain Current <sup>(Note3)</sup>	I <sub>DM</sub>	-220	A
Total Power Dissipation <sup>(Note4)</sup>	P <sub>D</sub>	96	W
Single Pulsed Avalanche Energy <sup>(Note5)</sup>	E <sub>AS</sub>	132	mJ

Note:

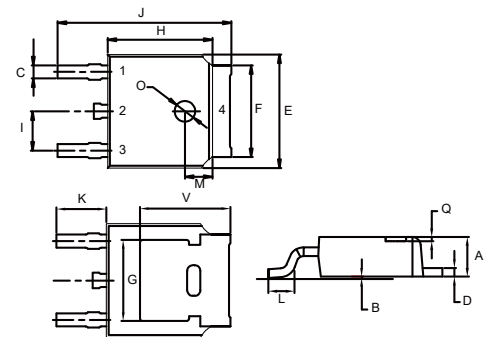
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P<sub>D</sub> is based on max. junction temperature, using junction-case thermal resistance.
5. T<sub>J</sub>=25°C, V<sub>DD</sub>= -40V, V<sub>GS</sub>= -10V, L= 0.5mH

## Internal Structure and Marking Code



# P-CHANNEL MOSFET

## DPAK(TO-252)



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

DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-40V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.6	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		10.5	14	m $\Omega$
Gate Resistance	$R_g$	$f=1MHz$		6		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-65	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-20A$			-1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=-14A, di_F/dt=100A/\mu s$		28		ns
Reverse Recovery Charge	$Q_{rr}$			21		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, V_{GS}=0V, f=1MHz$		3354		pF
Output Capacitance	$C_{oss}$			340		
Reverse Transfer Capacitance	$C_{rss}$			253		
Total Gate Charge	$Q_g$	$V_{DS}=-20V, V_{GS}=-10V, I_D=-14A$		59.1		nC
Gate-Source Charge	$Q_{gs}$			9		
Gate-Drain Charge	$Q_{gd}$			11		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-20V, V_{GEN}=-10V, R_G=6\Omega, I_{DS}=-1A$		11.2		ns
Turn-On Rise Time	$t_r$			10		
Turn-Off Delay Time	$t_{d(off)}$			149		
Turn-Off Fall Time	$t_f$			56		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

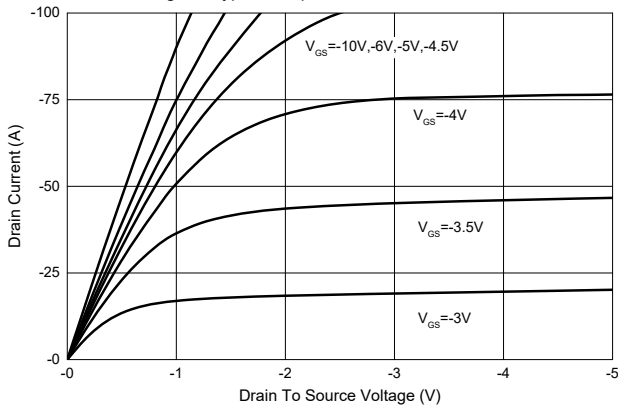


Fig. 2 - Transfer Characteristics

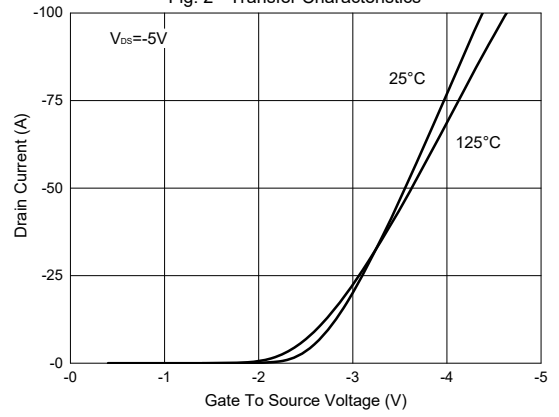


Fig. 3 -  $R_{DS(ON)} - I_D$

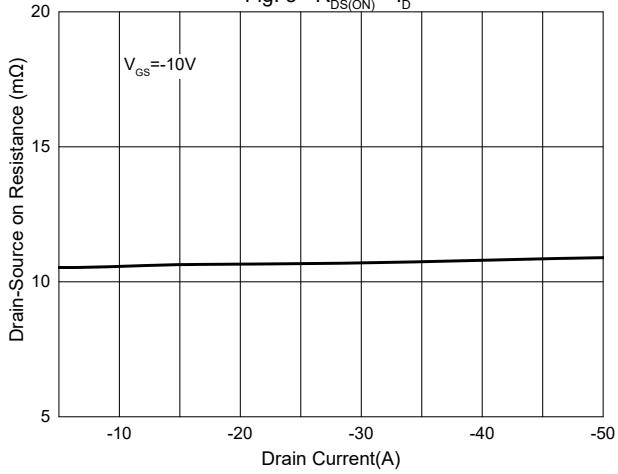


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

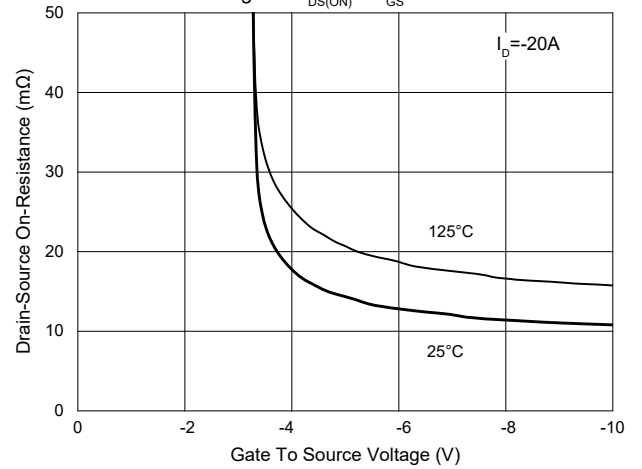


Fig. 5 - Normalized On Resistance Characteristics

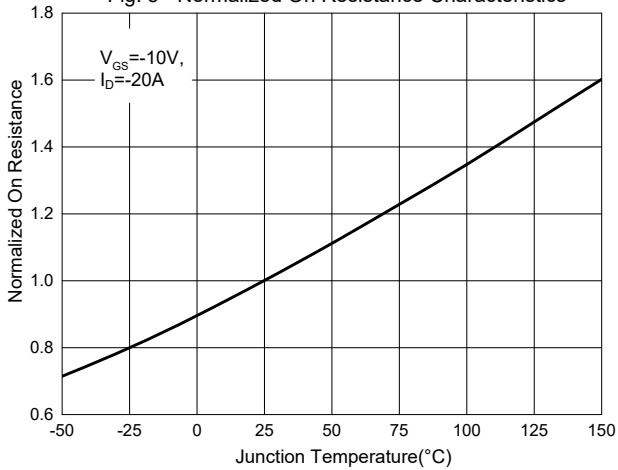
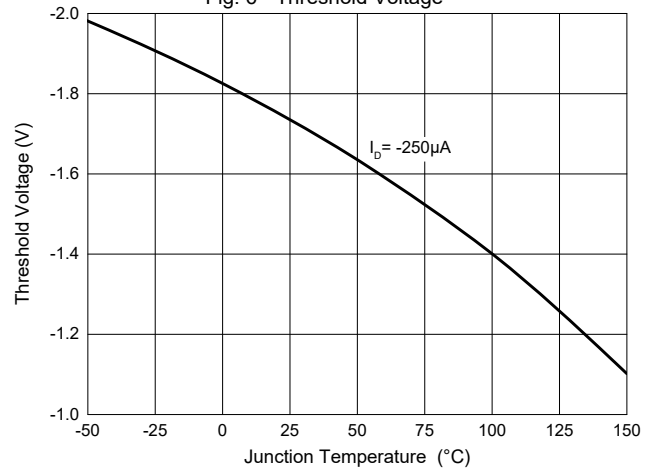


Fig. 6 - Threshold Voltage



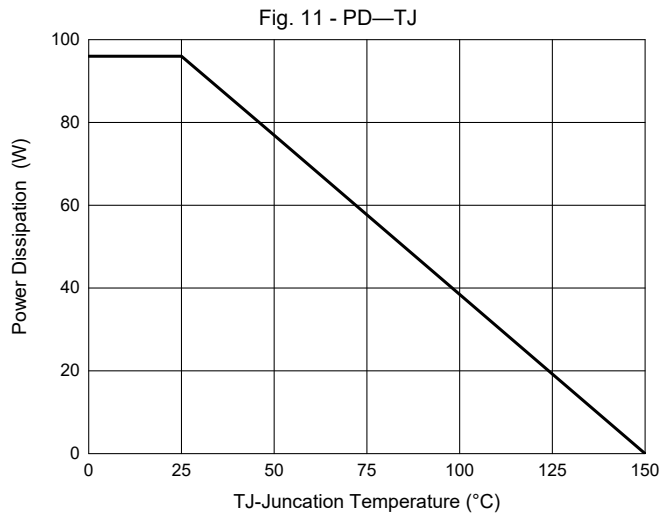
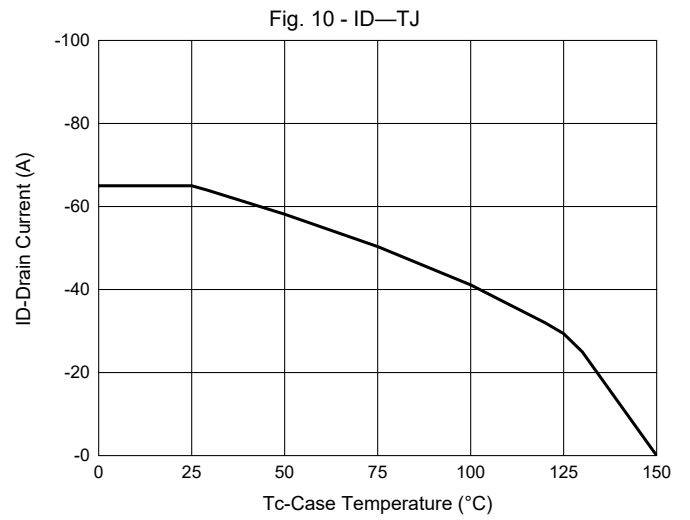
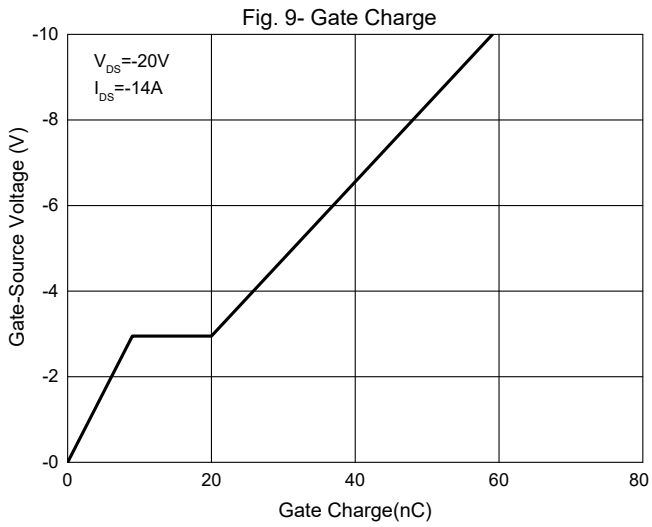
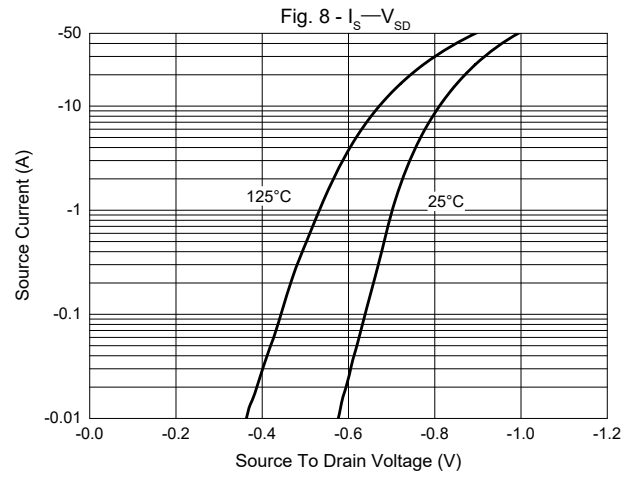
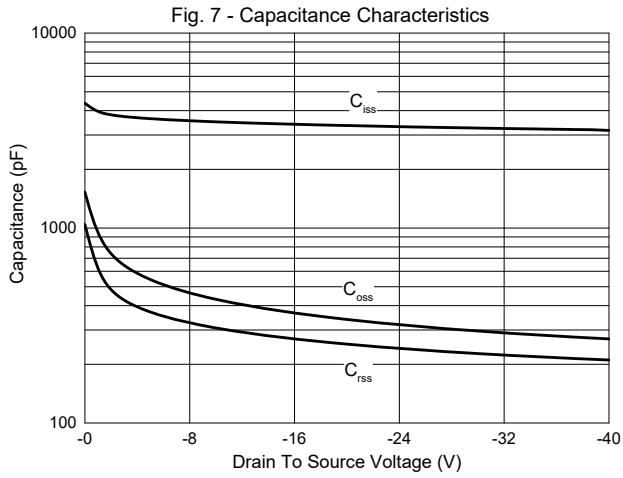


Fig. 12 - Safe Operation Area

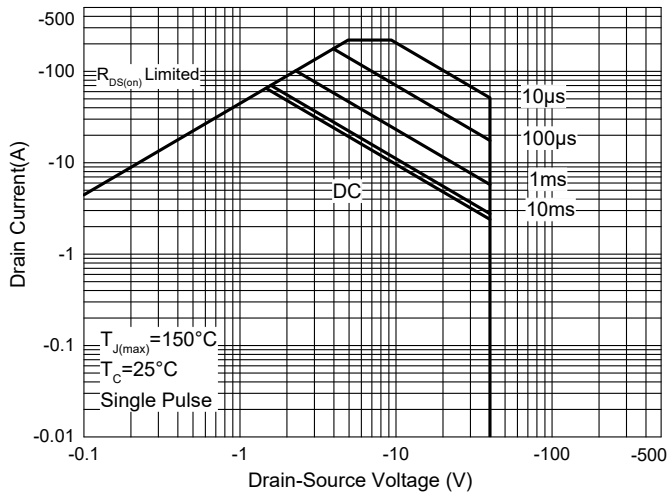
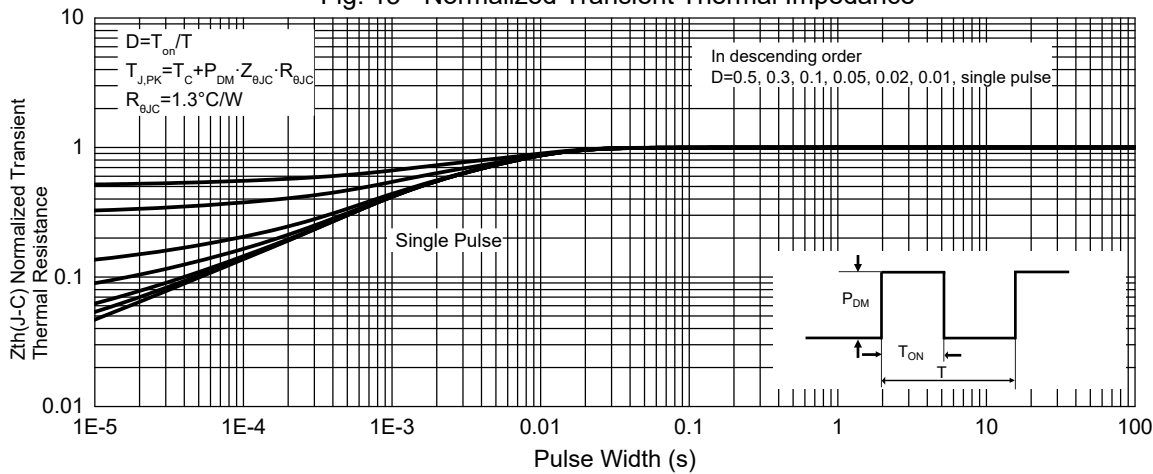


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

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

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