

Features

- AEC-Q101 Qualified
- Split Gate Trench MOSFET Technology
- High Density Cell Design For Ultra Low $R_{DS(on)}$
- Moisture Sensitivity Level 1
- Halogen Free."Green"Device^(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

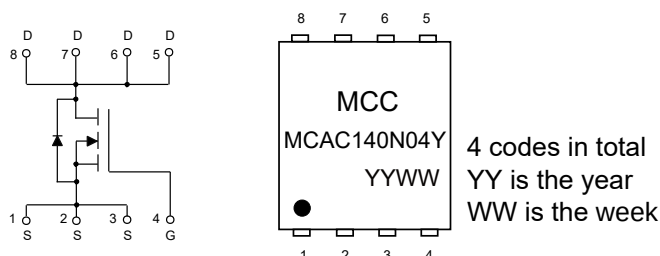
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 50°C/W Junction to Ambient^(Note 3)
- Thermal Resistance: 1°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	140	A
		99	
Pulsed Drain Current ^(Note4)	I_{DM}	560	A
Total Power Dissipation ^(Note 5)	P_D	150	W
Single Pulse Avalanche Energy ^(Note 6)	E_{AS}	169	mJ

Note:

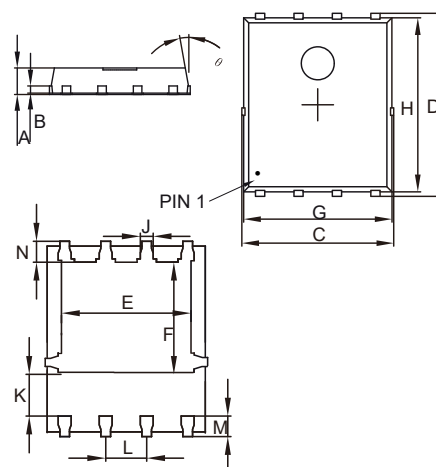
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-Case thermal resistance.
6. $T_J = 25^\circ\text{C}$, $V_{DD} = 30\text{V}$, $R_G = 25\Omega$, $V_{GS} = 10\text{V}$, $L = 0.5\text{mH}$.

Internal Structure and Marking Code



N-CHANNEL MOSFET

DFN5060



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.031	0.047	0.80	1.20	
B	0.010		0.254		TYP.
C	0.193	0.222	4.90	5.64	
D	0.232	0.250	5.90	6.35	
E	0.148	0.167	3.75	4.25	
F	0.126	0.154	3.20	3.92	
G	0.189	0.213	4.80	5.40	
H	0.222	0.239	5.65	6.06	
K	0.045	0.059	1.15	1.50	
J	0.012	0.020	0.30	0.50	
L	0.046	0.054	1.17	1.37	
M	0.012	0.028	0.30	0.71	
N	0.016	0.028	0.40	0.71	

Electrical Characteristics @ 25°C (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	40			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.7	3.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A		1.6	2.0	mΩ
		V _{GS} =4.5V, I _D =20A		2.7	3.9	
Gate Resistance	R _g	V _{GS} =0V, f=1MHz		1.8		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				140	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =50A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =50A, dI _F /dt=220A/μs		24.6		ns
Reverse Recovery Charge	Q _{rr}			12		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		2354		pF
Output Capacitance	C _{oss}			1073		
Reverse Transfer Capacitance	C _{rss}			69		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =50A		45.7		nC
Gate-Source Charge	Q _{gs}			9.7		
Gate-Drain Charge	Q _{gd}			10.4		
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, I _{DS} =40A, R _g = 3Ω		12.3		ns
Turn-On Rise Time	t _r			110		
Turn-Off Delay Time	t _{d(off)}			36.8		
Turn-Off Fall Time	t _f			22		

Curve Characteristics

Fig.1 - Typical Output Characteristics

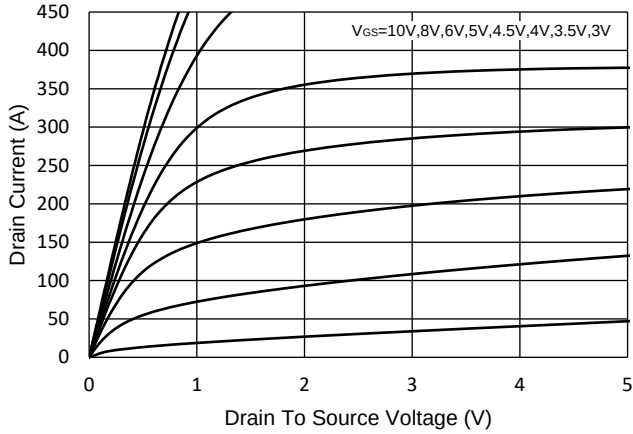


Fig.2 - Transfer Characteristics

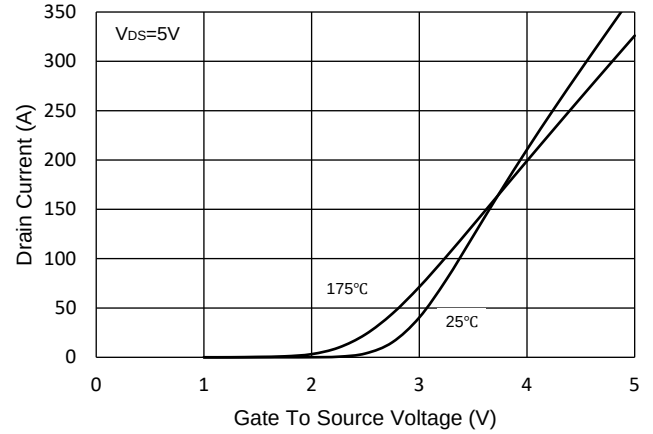


Fig.3 - $R_{DS(ON)} - V_{GS}$

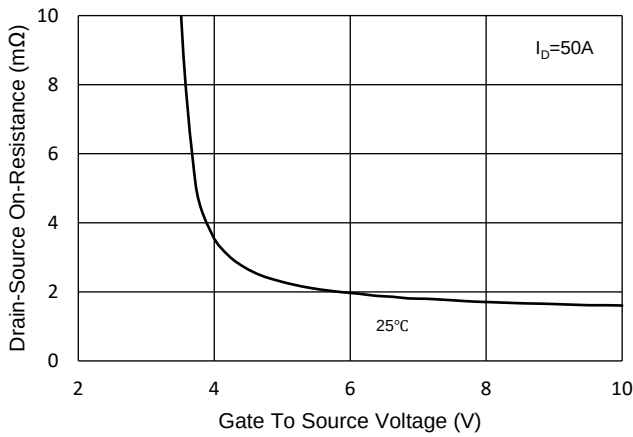


Fig.4 - $R_{DS(ON)} - I_D$

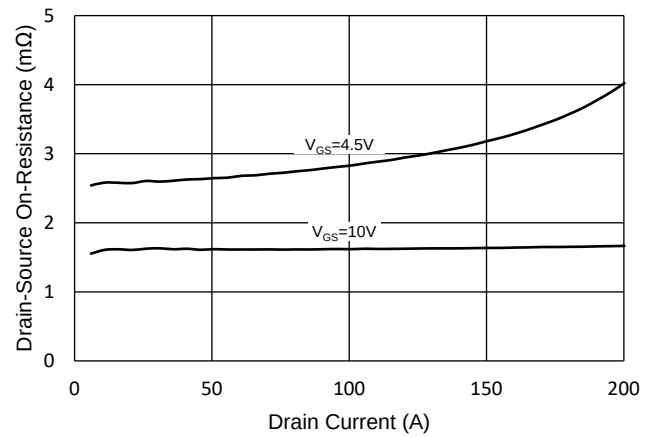


Fig.5 - Capacitance Characteristics

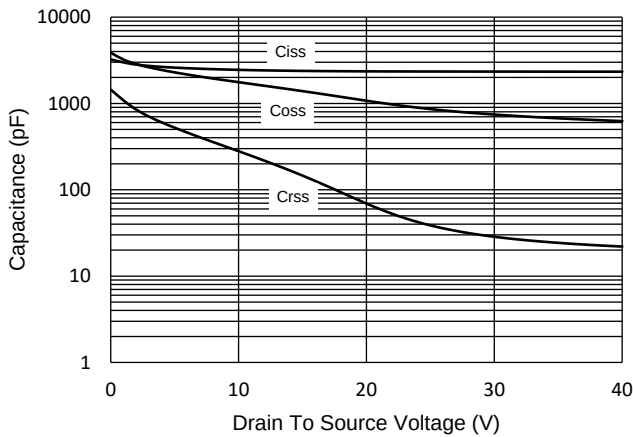
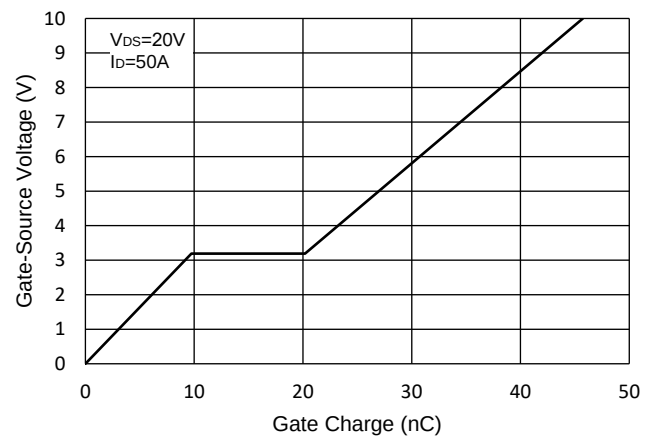


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

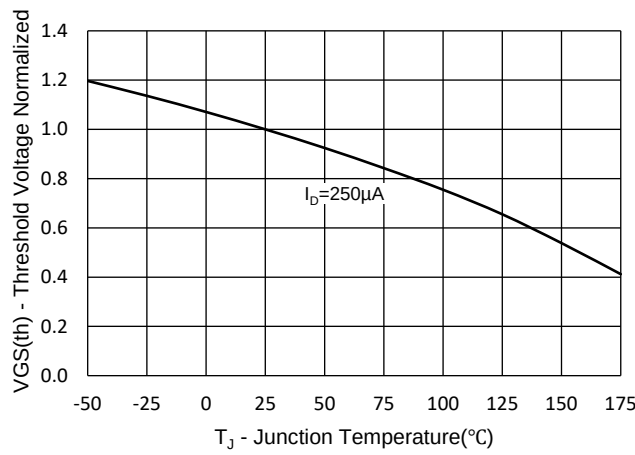


Fig.8 - Normalized On Resistance Characteristics

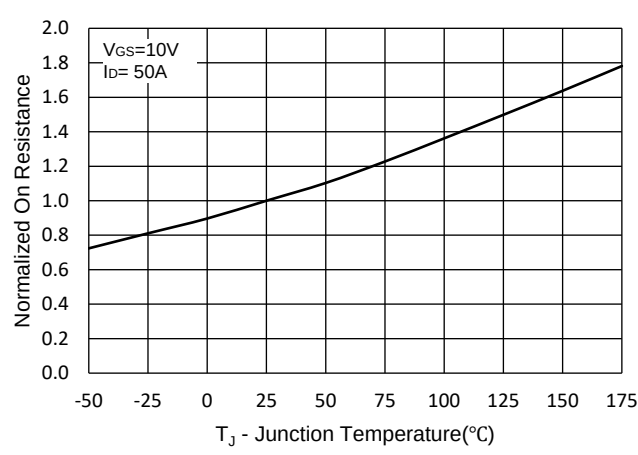


Fig.9 - $I_S - V_{SD}$

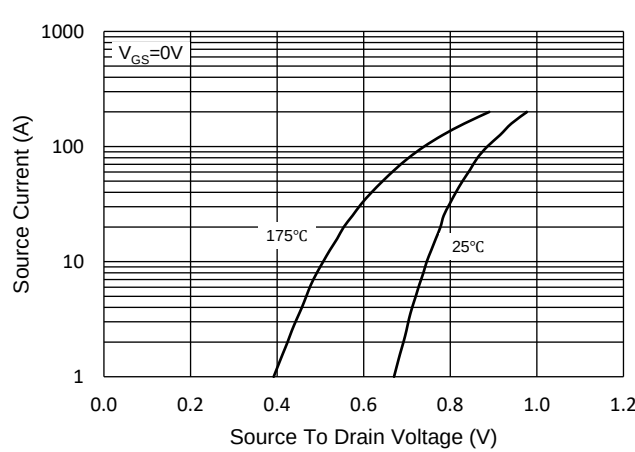


Fig.10 - Drain Current

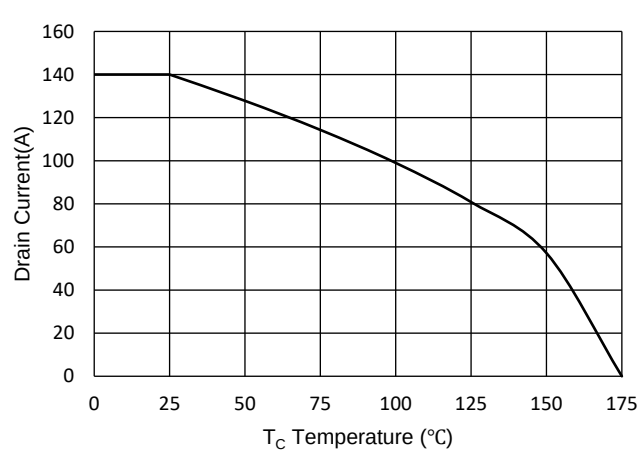
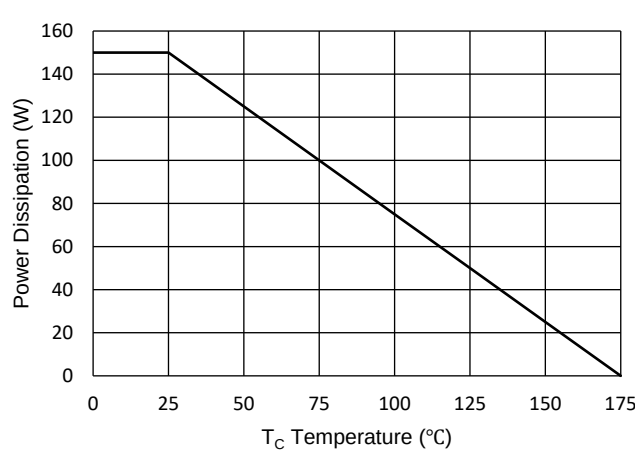


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

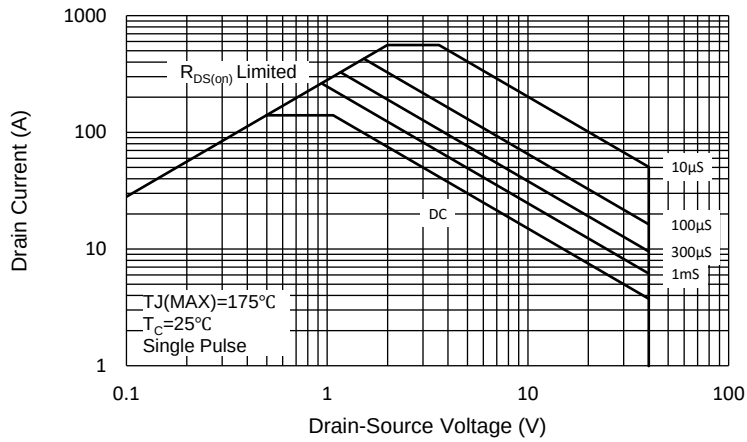
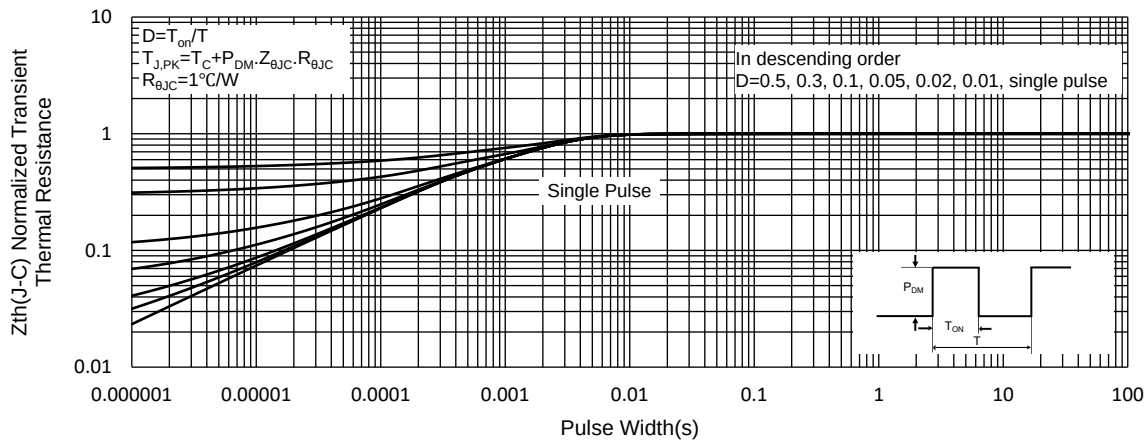


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel

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