

Features

- AEC-Q101 Qualified
- Split Gate Trench Mosfet Technology
- Excellent Package For Heat Dissipation
- Moisture Sensitivity Level 1
- 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

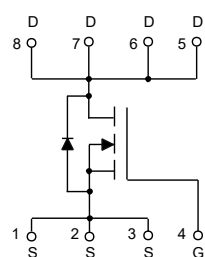
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 50°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 0.77°C/W Junction to Case (Bottom)
- Thermal Resistance: 0.93°C/W Junction to Case (Top)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	40	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	290	A
	T _C =100°C		205	
Pulsed Drain Current ^(Note 3)		I _{DM}	1160	A
Total Power Dissipation ^(Note 4)		P _D	195	W
Avalance Energy ^(Note 5)		E _{AS}	330	mJ

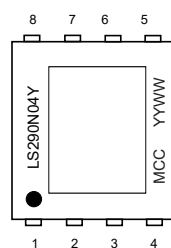
Note:

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 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case (Bottom) thermal resistance.
5. $T_J=25^\circ\text{C}$, $V_{DD}=30\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

Internal Structure and Marking Code



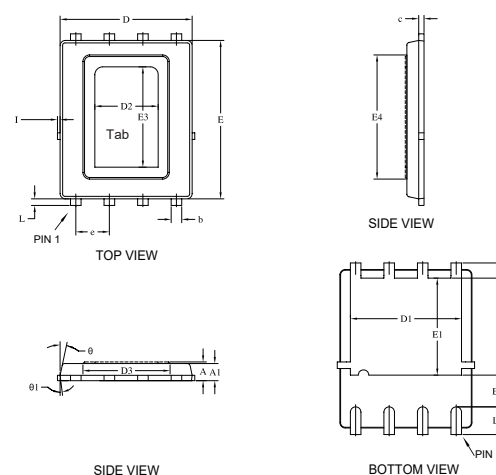
Tab.SOURCE



4 codes in total
YY is the year
WW is the week

N-CHANNEL MOSFET

DFN5060-DSC



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.026	0.030	0.66	0.76	
A1	0.024	0.030	0.60	0.75	
b	0.013	0.021	0.33	0.53	
c	0.006	0.012	0.15	0.30	
D	0.197		5.00		Bsc
D1	0.160	0.172	4.06	4.36	
D2	0.094		2.40		Bsc
D3	0.110	0.150	2.80	3.80	
E	0.236		6.00		Bsc
E1	0.139	0.151	3.53	3.83	
E2	0.041	0.053	1.05	1.35	
E3	0.150		3.80		Bsc
E4	0.165	0.205	4.20	5.20	
e	0.050		1.27		Bsc
l	---		0.006		0.15
L	0.006	0.014	0.15	0.35	
L1	0.037	0.046	0.93	1.18	
L2	0.018	0.028	0.45	0.70	
θ	12°Bsc				
θ1	7°Bsc				

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	2	2.8	4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =60A		0.85	1.1	mΩ
Gate Resistance	R _G	f=1 MHz, Open drain		2.0		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				290	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =50A, dI _F /dt=100A/μs		78		ns
Reverse Recovery Charge	Q _{rr}			87		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		5413		pF
Output Capacitance	C _{oss}			3400		
Reverse Transfer Capacitance	C _{rss}			231		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =50A		79		nC
Gate-Source Charge	Q _{gs}			24		
Gate-Drain Charge	Q _{gd}			17		
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, R _{GEN} =6Ω, I _{DS} =50A		26		ns
Turn-On Rise Time	t _r			35.5		
Turn-Off Delay Time	t _{d(off)}			60		
Turn-Off Fall Time	t _f			47		

Curve Characteristics

Fig.1 - Typical Output Characteristics

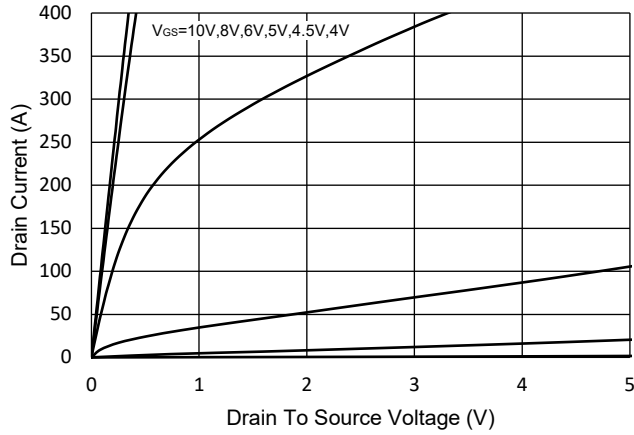


Fig.2 - Transfer Characteristic

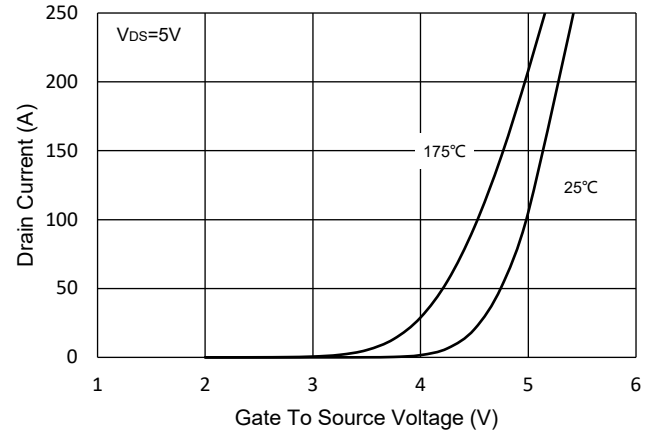


Fig.3 - $R_{DS(ON)} - V_{GS}$

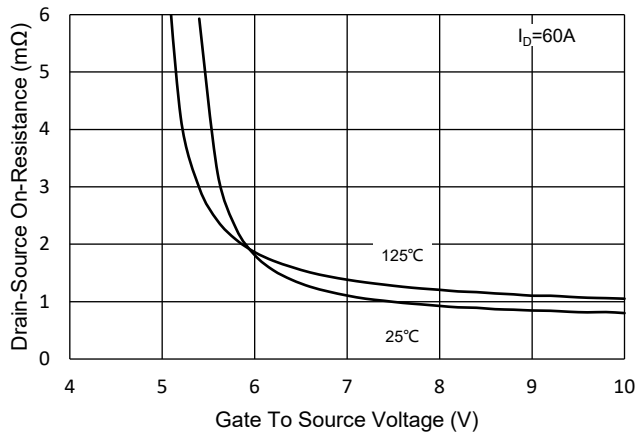


Fig.4 - $R_{DS(ON)} - I_D$

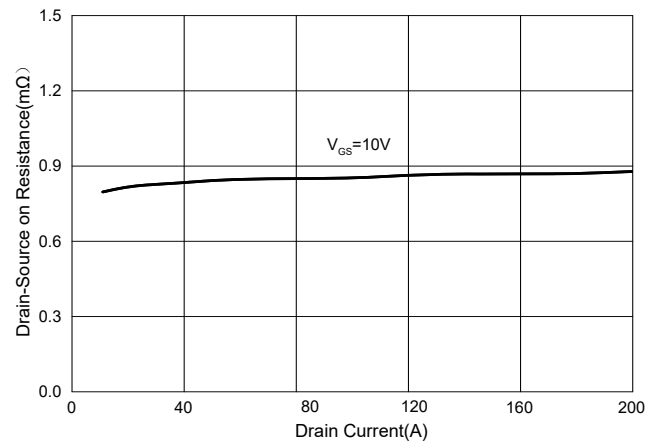


Fig.5 - Capacitance Characteristics

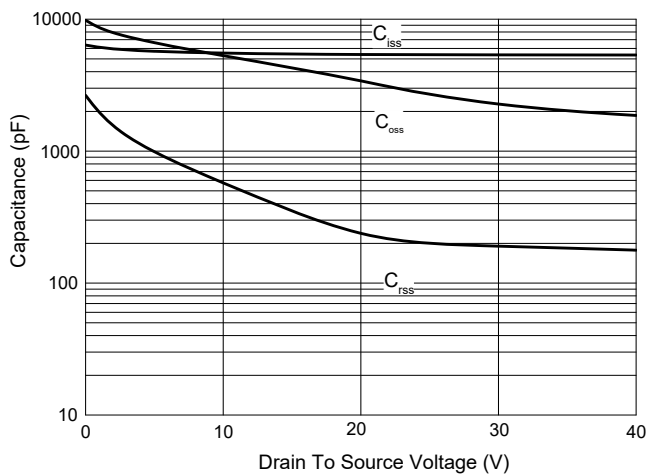
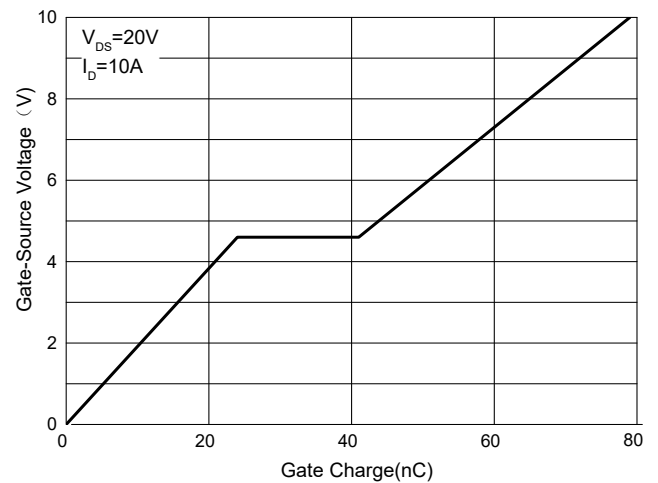


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

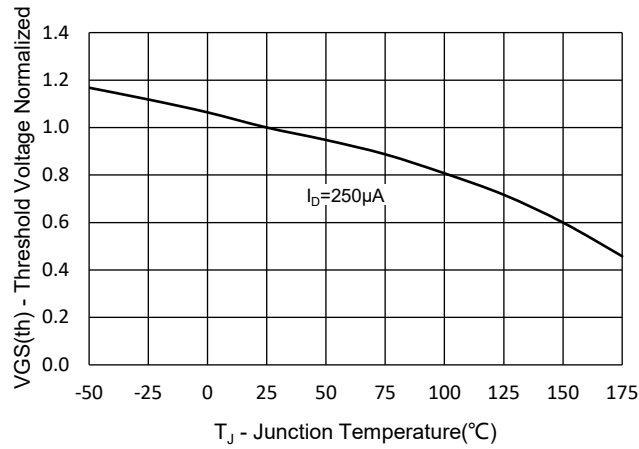


Fig.8 - Normalized On Resistance Characteristics

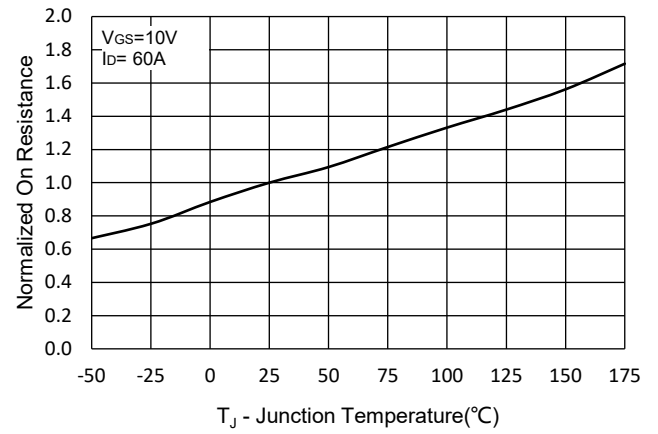


Fig.9 - $I_S - V_{SD}$

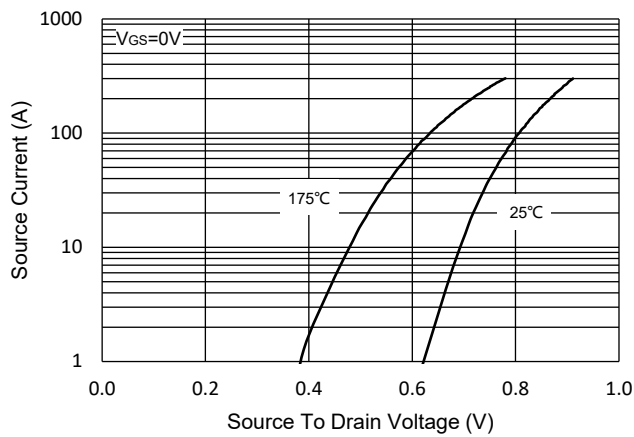


Fig.10 - Drain Current

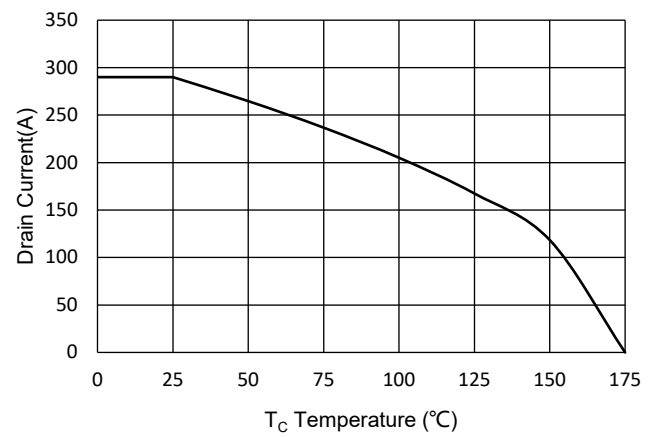
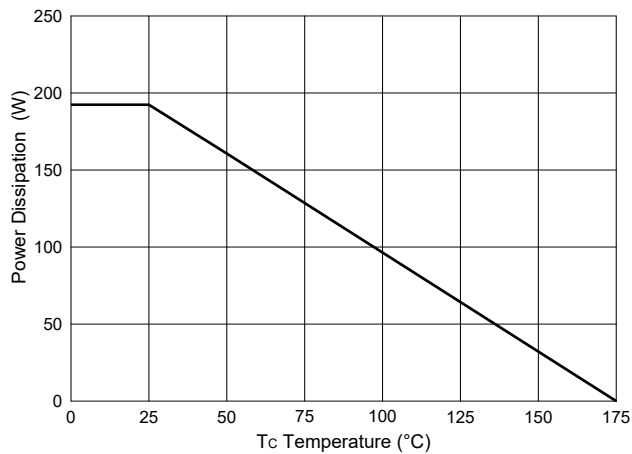


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

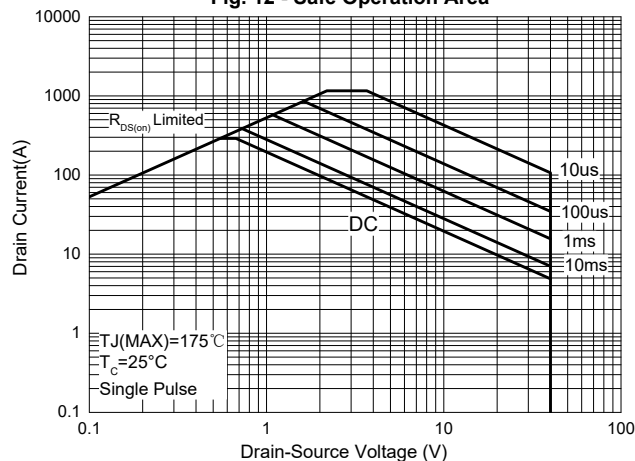


Fig. 13 -Normalized Transient Thermal Impedance (Bottom)

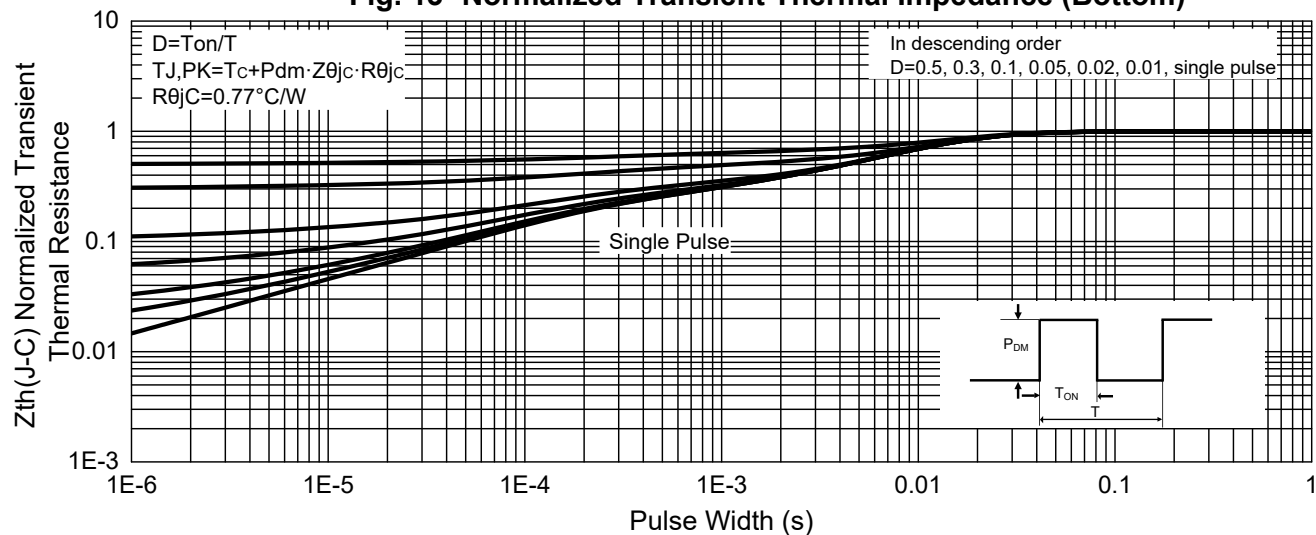
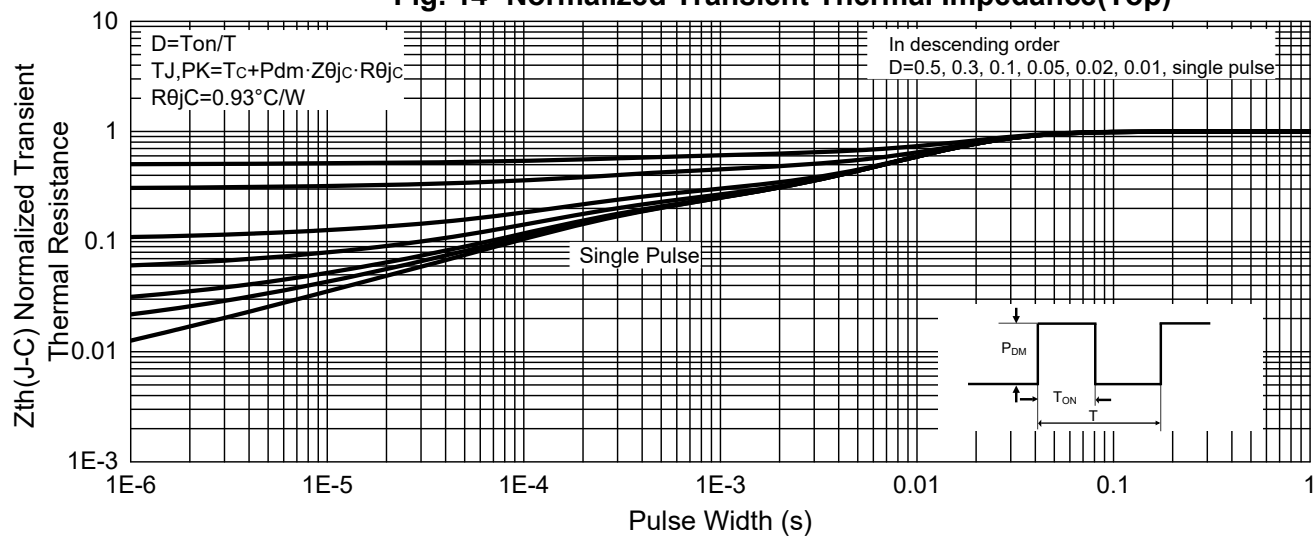


Fig. 14 -Normalized Transient Thermal Impedance(Top)



Ordering Information

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

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