CEZ100R29

Dual Enhancement Mode Field Effect Transistor (N and P Channel)

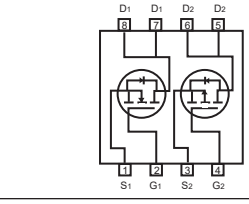
	V_{DSS}	$R_{DS(ON)\ typ}$@V_{GS}	I_D
N Channel	100V	68mΩ@V_{GS} = 10V	10.7A
		72mΩ@V_{GS} = 4.5V	10.3A
P Channel	-100V	160mΩ@V_{GS} = -10V	-6.7A
		168mΩ@V_{GS} = -4.5V	-6.5A

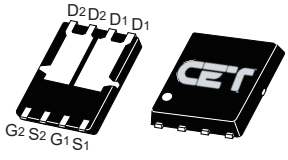
FEATURES

- High power and current handing capability.
- Reliable and rugged.
- Pb-free lead plating ; RoHS compliant.
- Halogen Free.
- Surface mount Package.

APPLICATIONS

- Motor Drive.
- Drones.
- DC Fan.





P-PAK 5X6

ABSOLUTE MAXIMUM RATINGS T_C = 25°C unless otherwise noted

Parameter		Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage		V_{DS}	100	-100	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Drain Current-Continuous	I_D @$R_{\theta JC}$	T_C =25°C	10.7	-6.7	A
		T_C =70°C	8.6	-5.4	A
	I_D @$R_{\theta JA}$	T_A =25°C	4.5	-2.8	A
		T_A =70°C	3.6	-2.2	A
Drain Current-Pulsed [a]	I_{DM} @$R_{\theta JC}$	T_C =25°C	42.8	-26.8	A
	I_{DM} @$R_{\theta JA}$	T_A =25°C	18	-11.2	A
Maximum Power Dissipation		P_D	17.9	17.9	W
Operating and Store Temperature Range		T_J,T_{stg}	-55 to 150		°C

Thermal Characteristics

Parameter	Symbol	Limit		Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7	7	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40		°C/W

N-Channel Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V			1	μA
Gate Body Leakage Current, Forward	I_{GSSF}	V_{GS} = 20V, V_{DS} = 0V			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	V_{GS} = -20V, V_{DS} = 0V			-100	nA
On Characteristics [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 250μA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 5A		68	82	mΩ
		V_{GS} = 4.5V, I_D = 3A		72	88	mΩ
Gate input resistance	R_g	f=1MHz,open Drain		2.6		Ω
Dynamic Characteristics [c]						
Input Capacitance	C_{iss}	V_{DS} = 50V, V_{GS} = 0V, f = 1.0 MHz		1670		pF
Output Capacitance	C_{oss}			55		pF
Reverse Transfer Capacitance	C_{rss}			35		pF
Switching Characteristics [c]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50V, I_D = 3A, V_{GS} = 10V, R_{GEN} = 3.9Ω		19		ns
Turn-On Rise Time	t_r			3		ns
Turn-Off Delay Time	$t_{d(off)}$			48		ns
Turn-Off Fall Time	t_f			3		ns
Total Gate Charge	Q_g	V_{DS} = 50V, I_D = 3A, V_{GS} = 4.5V		13		nC
Gate-Source Charge	Q_{gs}			4		nC
Gate-Drain Charge	Q_{gd}			5		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current	I_S				10.7	A
Drain-Source Diode Forward Voltage [b]	V_{SD}	V_{GS} = 0V, I_S = 1A			1.2	V

Notes :
a.Repetitive Rating : Pulse width limited by maximum junction temperature.
b.Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
c.Guaranteed by design, not subject to production testing.

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P-Channel Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -100V, V_{GS} = 0V			-1	μA
Gate Body Leakage Current, Forward	I_{GSSF}	V_{GS} = 20V, V_{DS} = 0V			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	V_{GS} = -20V, V_{DS} = 0V			-100	nA
On Characteristics [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = -250μA	-1		-3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D =-5A		160	209	mΩ
		V_{GS} = -4.5V, I_D =-3A		168	220	mΩ
Gate input resistance	R_g	f=1MHz,open Drain		18.6		Ω
Dynamic Characteristics [c]						
Input Capacitance	C_{iss}	V_{DS} = -50V, V_{GS} = 0V, f = 1.0 MHz		1500		pF
Output Capacitance	C_{oss}			55		pF
Reverse Transfer Capacitance	C_{rss}			40		pF
Switching Characteristics [c]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -50V, I_D = -6A, V_{GS} = -10V, R_{GEN} = 4.5Ω		14		ns
Turn-On Rise Time	t_r			5		ns
Turn-Off Delay Time	$t_{d(off)}$			97		ns
Turn-Off Fall Time	t_f			33		ns
Total Gate Charge	Q_g	V_{DD} = -50V, I_D = -3A, V_{GS} = -4.5V		13		nC
Gate-Source Charge	Q_{gs}			3		nC
Gate-Drain Charge	Q_{gd}			5		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current	I_S				-6.7	A
Drain-Source Diode Forward Voltage [b]	V_{SD}	V_{GS} = 0V, I_S = -1A			-1.2	V

Notes :
a.Repetitive Rating : Pulse width limited by maximum junction temperature.
b.Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
c.Guaranteed by design, not subject to production testing.

N-CHANNEL

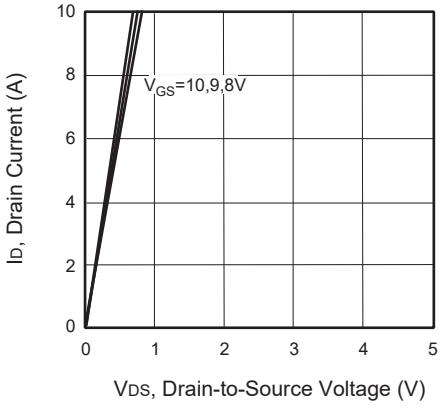


Figure 1. Output Characteristics

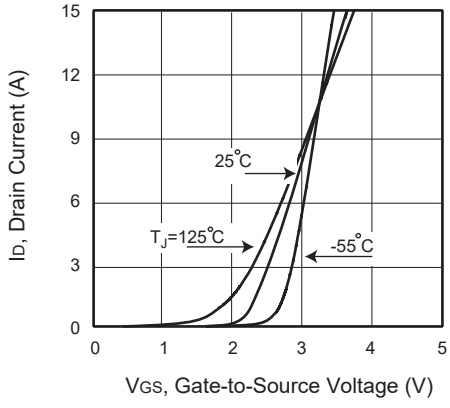


Figure 2. Transfer Characteristics

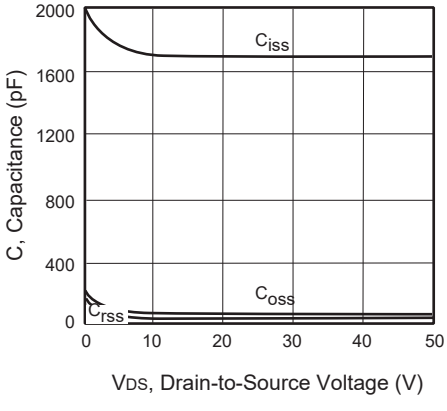


Figure 3. Capacitance

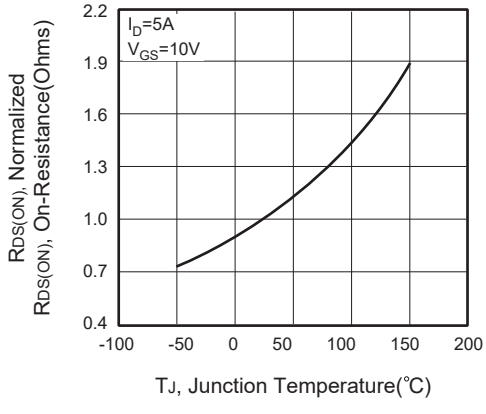


Figure 4. On-Resistance Variation with Temperature

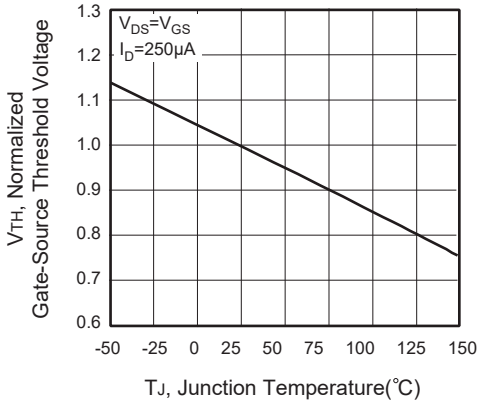


Figure 5. Gate Threshold Variation with Temperature

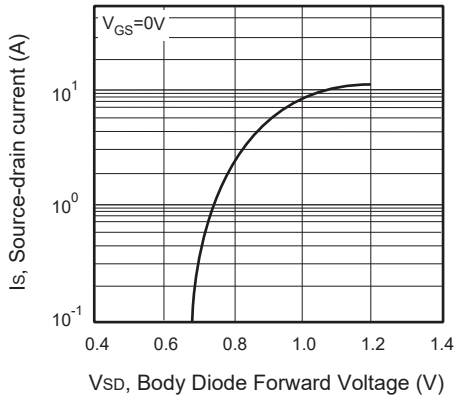


Figure 6. Body Diode Forward Voltage Variation with Source Current

P-CHANNEL

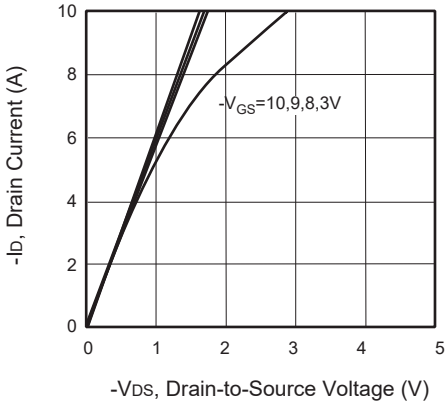


Figure 7. Output Characteristics

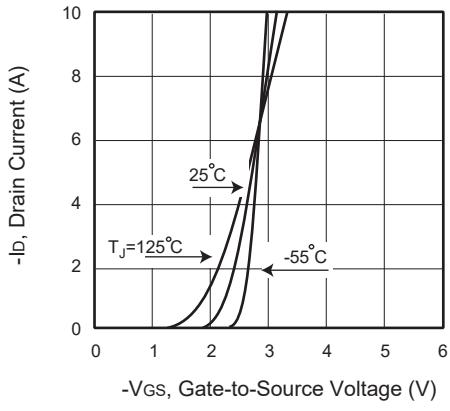


Figure 8. Transfer Characteristics

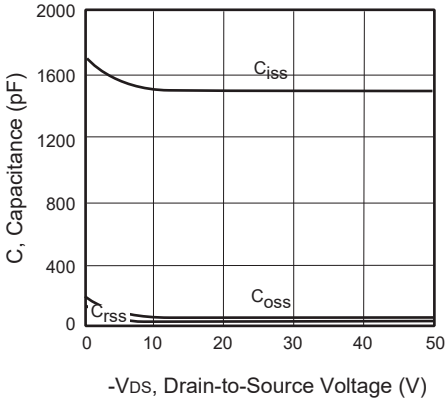


Figure 9. Capacitance

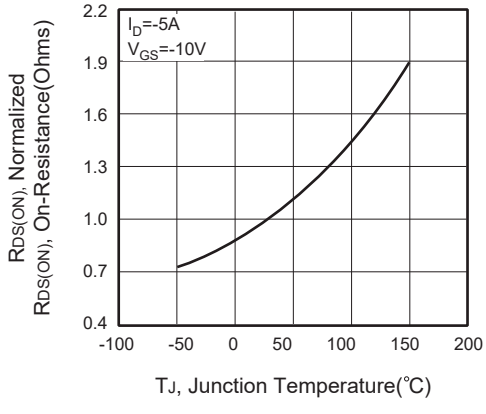


Figure 10. On-Resistance Variation with Temperature

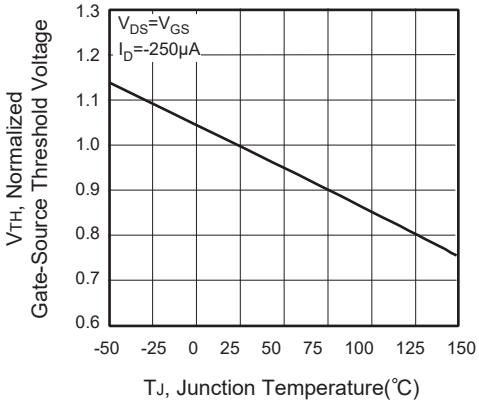


Figure 11. Gate Threshold Variation with Temperature

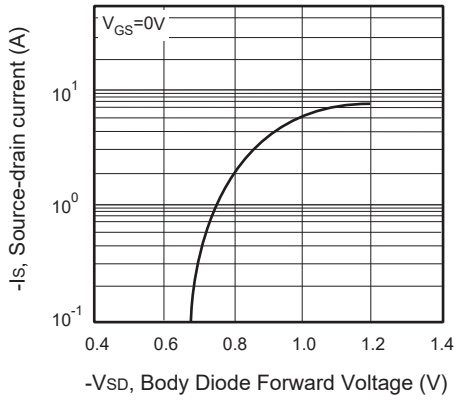


Figure 12. Body Diode Forward Voltage Variation with Source Current

N-CHANNEL

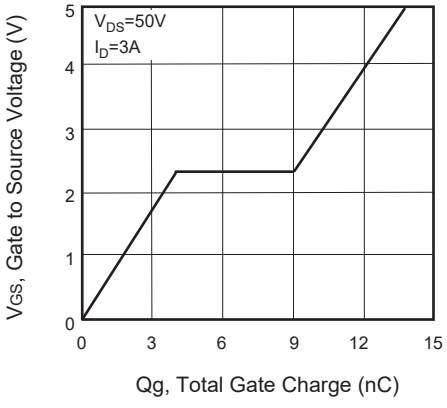


Figure 13. Gate Charge

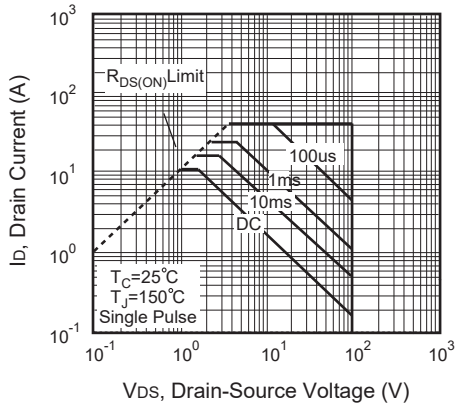


Figure 14. Maximum Safe Operating Area

P-CHANNEL

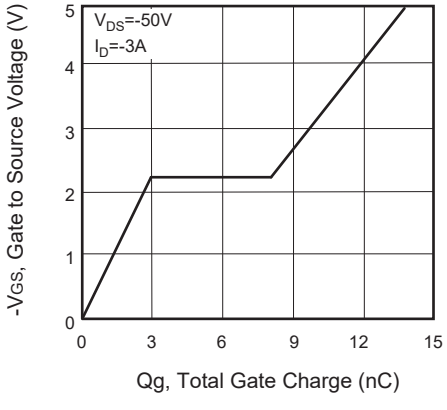


Figure 15. Gate Charge

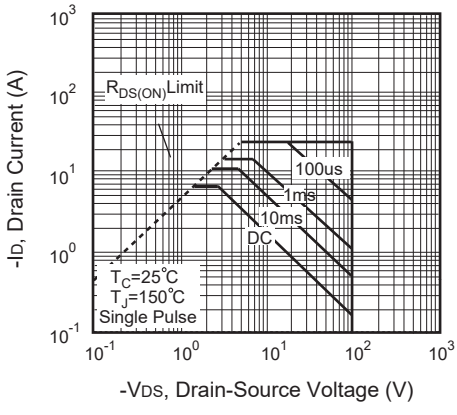


Figure 16. Maximum Safe Operating Area

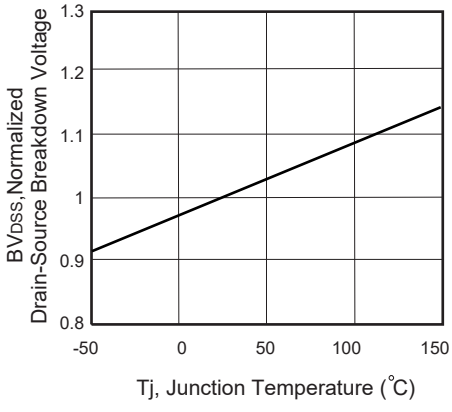


Figure 17. Breakdown Voltage Variation VS Temperature

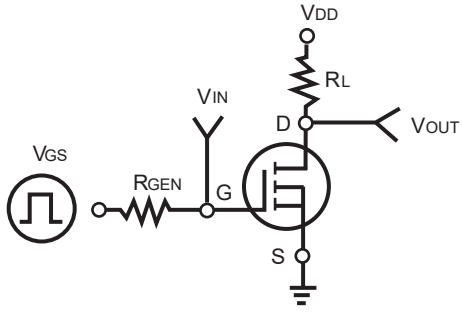


Figure 18. Switching Test Circuit

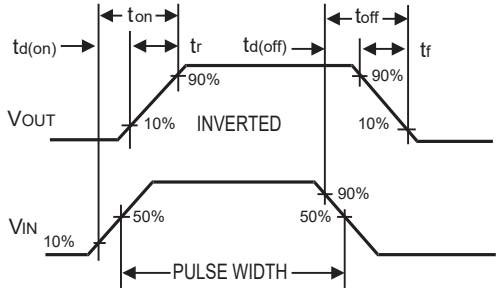


Figure 19. Switching Waveforms

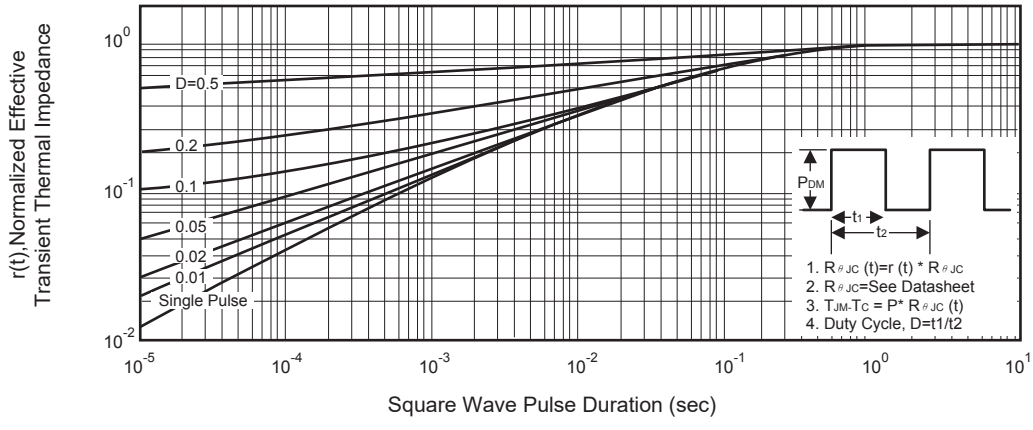
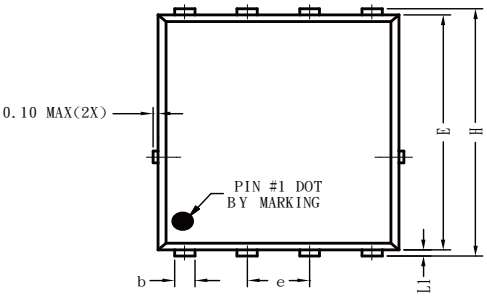
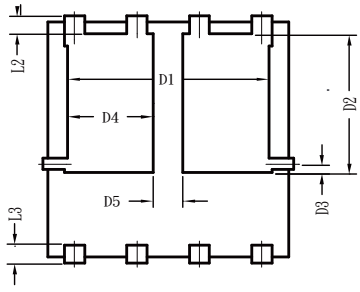


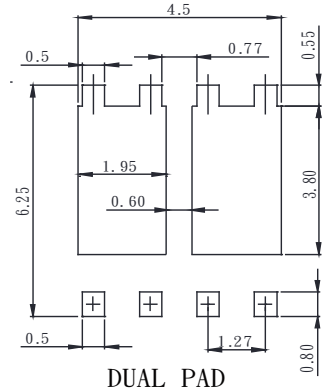
Figure 20. Normalized Thermal Transient Impedance Curve

P-PAK5X6 產品外觀尺寸圖 (Product Outline Dimension)

DUAL PAD 尺寸圖

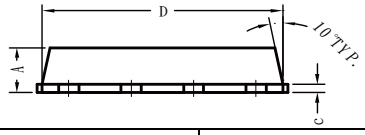






DUAL PAD

RECOMMENDED LAND PATTERN



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.800	1.170	0.031	0.046
b	0.340	0.490	0.013	0.019
c	0.20	0.34	0.008	0.013
D	4.800	5.100	0.009	0.011
D1	3.800	4.200	0.150	0.165
D2	3.180	3.78	0.125	0.149
D3	0.150	0.360	0.006	0.142
D4	1.600	1.800	0.063	0.071
D5	0.500	0.700	0.020	0.028
E	5.650	5.900	0.222	0.232
e	1.270 TYP		0.050 TYP	
H	5.900	6.150	0.232	0.242
L1	0.050	0.250	0.002	0.010
L2	0.380	0.620	0.015	0.024
L3	0.380	0.75	0.015	0.030