

General Description

MY4510CBNE5 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications.

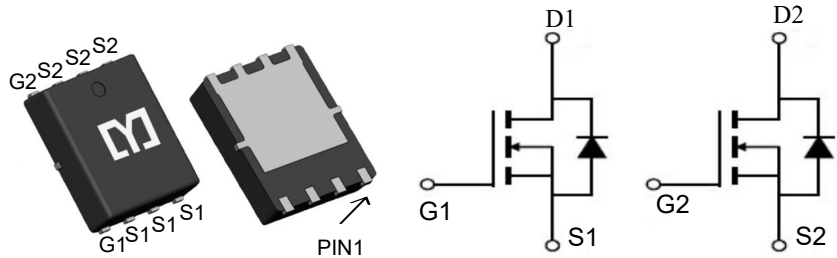


Features

V_{DSS}	30	30	V
I_D	95	60	A
$R_{DS(ON)}(at V_{GS}=10V)$	< 4.5	< 10	m Ω
$R_{DS(ON)}(at V_{GS}=4.5V)$	< 7	< 14	m Ω

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4510CBNE5	PDFN5*6-8L	null	5000

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETERS/ TEST CONDITIONS		SYMBOL	CH	LIMITS	UNITS
Drain-Source Voltage		V _{DS}	Q2	30	V
			Q1	30	
Gate-Source Voltage		V _{GS}	Q2	±20	
			Q1	±20	
Continuous Drain Current ³	T _C = 25 °C	I _D	Q2	95	A
	T _C = 100 °C		Q1	60	
			Q2	60	
			Q1	48	
Pulsed Drain Current ¹		I _{DM}	Q2	150	
			Q1	120	
Continuous Drain Current	T _A = 25 °C	I _D	Q2	24	
	T _A = 70 °C		Q1	13	
			Q2	19	
			Q1	10	
Avalanche Current		I _{AS}	Q2	53	
			Q1	26	
Avalanche Energy	L = 0.1mH	E _{AS}	Q2	140	mJ
			Q1	33.8	
Power Dissipation	T _C = 25 °C	P _D	Q2	36	W
	T _C = 100 °C		Q1	25	
			Q2	14	
			Q1	10	

Power Dissipation	T _A = 25 °C	P _D	Q2	2.4	W
	T _A = 70 °C		Q1	1.8	
			Q2	1.5	
			Q1	1.1	
Operating Junction & Storage Temperature Range		T _J , T _{STG}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	CH.	TYPICAL	MAXIMUM	UNITS
Junction- to- Ambient ²	$R_{\theta JA}$	Q2		52	$^{\circ}\text{C} / \text{W}$
		Q1		69	
Junction- to- Case	$R_{\theta JC}$	Q2		3.4	
		Q1		5	

¹ Pulse width limited by maximum junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$.

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 $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

³ Package limitation current :Q1=35A,Q2=35A.

Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	Q2	30			V
			Q1	30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	Q2	1.3	1.7	2.3	
			Q1	1.3	1.7	2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	Q2			± 100	nA
			Q1			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$	Q2			1	μA
			Q1			1	
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^{\circ}C$	Q2			10	
			Q1			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 16A$	Q2		10	14	mΩ
		$V_{GS} = 4.5V, I_D = 11A$	Q1		5.5	7.5	
		$V_{GS} = 10V, I_D = 20A$	Q2		6.5	10	
		$V_{GS} = 10V, I_D = 11A$	Q1		2.7	4.5	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 20A$	Q2		70		S
		$V_{DS} = 5V, I_D = 11A$	Q1		50		

Typical Characteristics

DYNAMIC											
Input Capacitance	C _{iss}		V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	Q2		2779		pF			
				Q1		1041					
Output Capacitance	C _{oss}			Q2		522					
				Q1		198					
Reverse Transfer Capacitance	C _{rss}			Q2		318					
				Q1		123					
Gate Resistance	R _g		V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	Q2		0.83		Q			
				Q1		2					
Total Gate Charge ²	Q _g	V _{GS} =10V	Q2 V _{DS} = 15V , V _{GS} = 10V, I _D = 20A Q1 V _{DS} = 15V , V _{GS} = 10V, I _D = 11A	Q2		54		nC			
				Q1		21					
		V _{GS} =4.5V		Q2		29					
				Q1		11					
Gate- Source Charge ²	Q _{gs}			Q2		7.1					
				Q1		2.4					
Gate-Drain Charge ²	Q _{gd}			Q2		13.4					
				Q1		6					
Turn-On Delay Time ²	t _{d(on)}			Q2 V _{DS} = 15V,I _D ≅ 20A, V _{GS} =10V, R _{GEN} = 6Q Q1 V _{DS} = 15V ,I _D ≅ 11A, V _{GS} = 10V, R _{GEN} =6Q	Q2		25			nS	
					Q1		23				
Rise Time ²	t _r		Q2			17					
			Q1			16					
Turn-Off Delay Time ²	t _{d(off)}		Q2			54					
			Q1			50					
Fall Time ²	t _f		Q2			17					
			Q1			15					
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)											
Continuous Current ³	I _S				Q2			36	A		
				Q1			20				
Forward Voltage ¹	V _{SD}		I _F = 20A, V _{GS} = 0V	Q2			1	V			
			I _F = 11A, V _{GS} = 0V	Q1			1.2				
Reverse Recovery Time	t _{rr}		Q2 I _F = 20A, dI _F /dt = 100A /μS Q1	Q2		21		nS			
				Q1		12.4					
Reverse Recovery Charge	Q _{rr}		Q1 I _F = 11A, dI _F /dt = 100A /μS	Q2		10		nC			
				Q1		4					

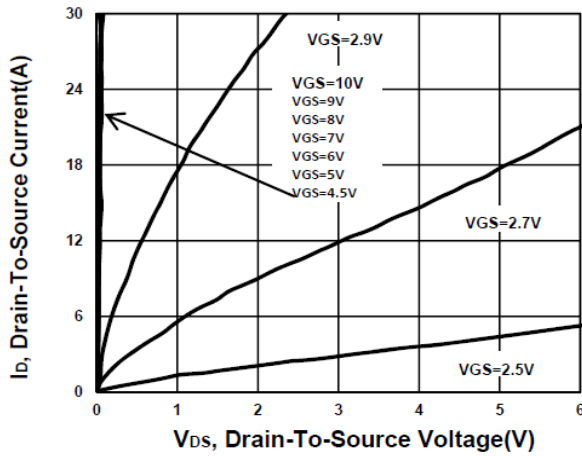
¹ Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

² Independent of operating temperature.

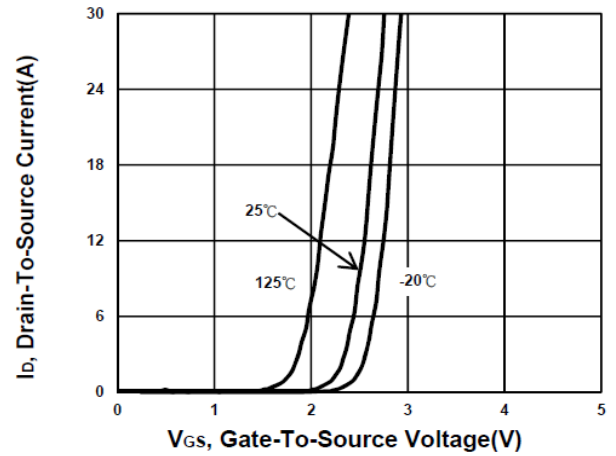
³ Package limitation current : Q1=35A, Q2=35A.

Q2

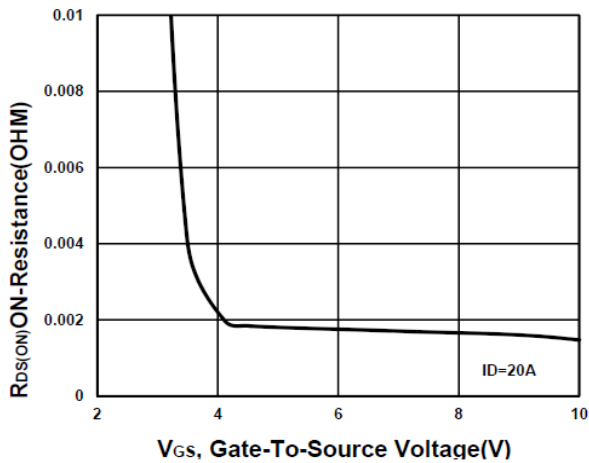
Output Characteristics



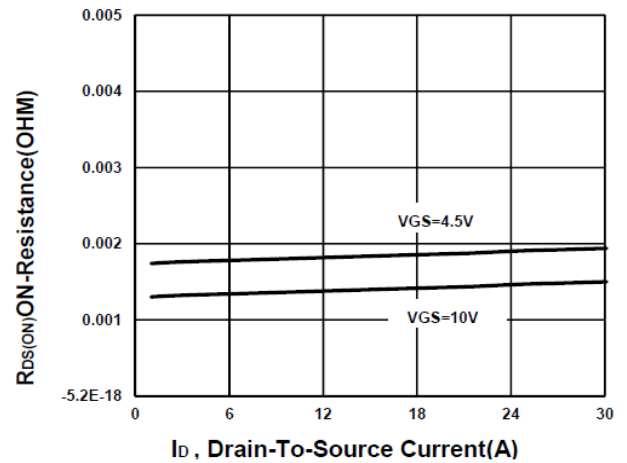
Transfer Characteristics



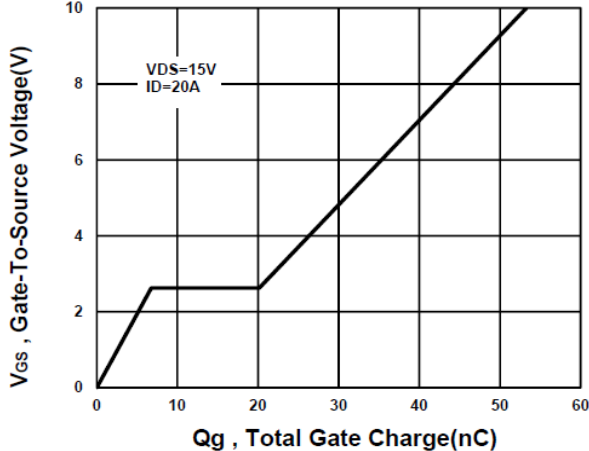
On-Resistance VS Gate-To-Source



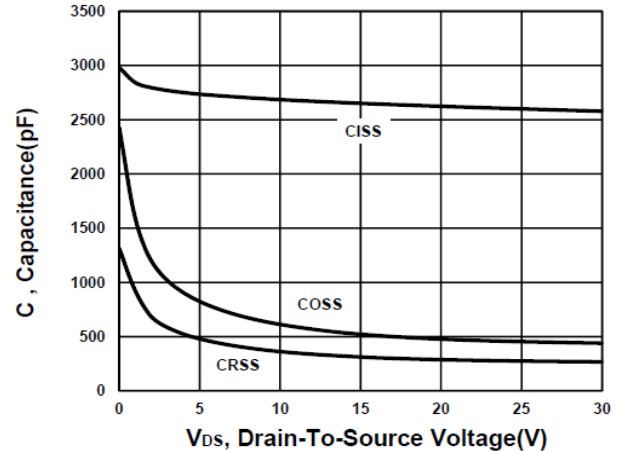
On-Resistance VS Drain Current



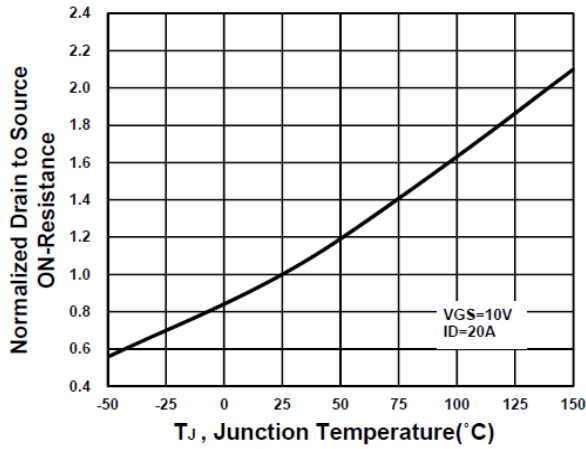
Gate charge Characteristics



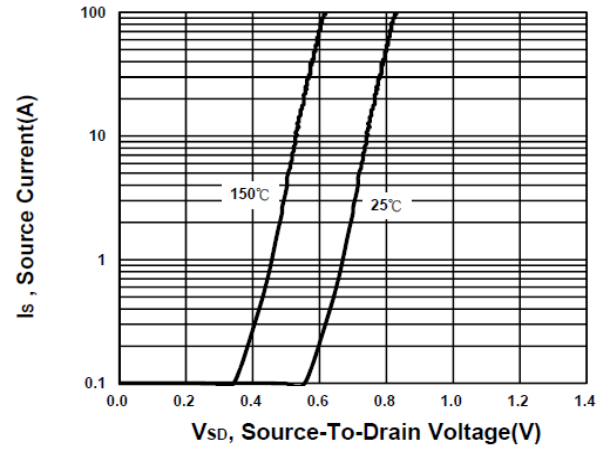
Capacitance Characteristic



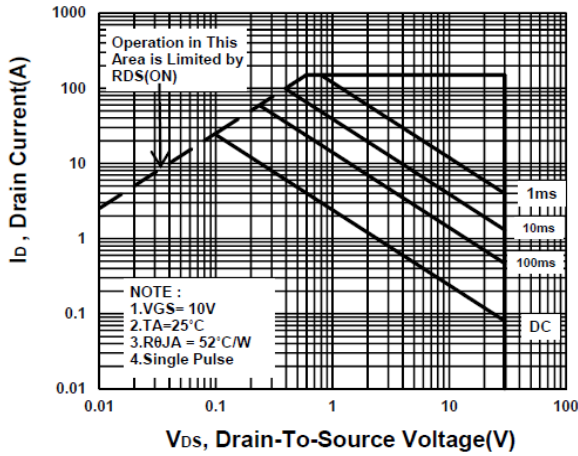
On-Resistance VS Temperature



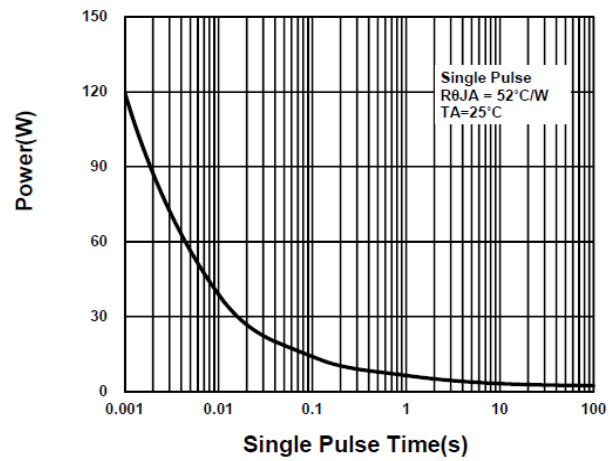
Source-Drain Diode Forward Voltage



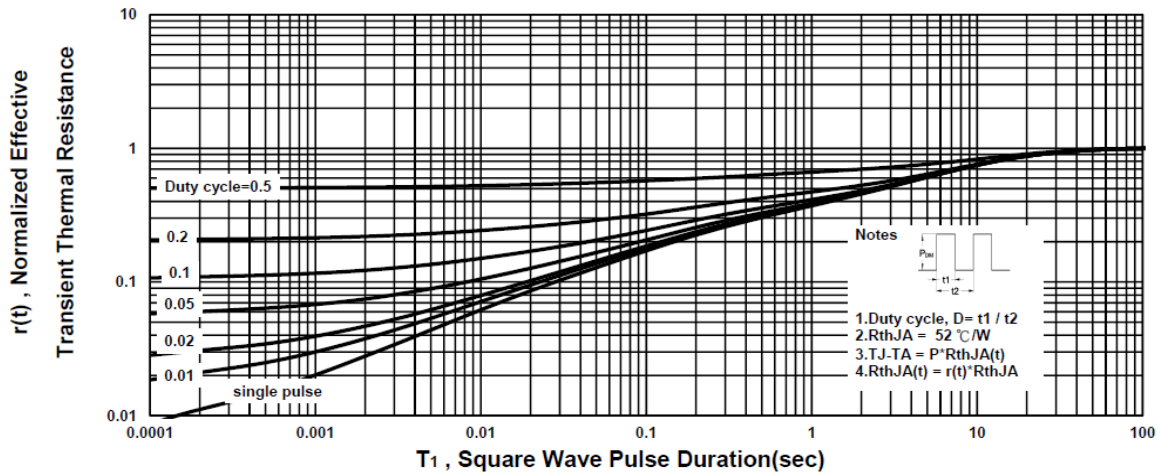
Safe Operating Area

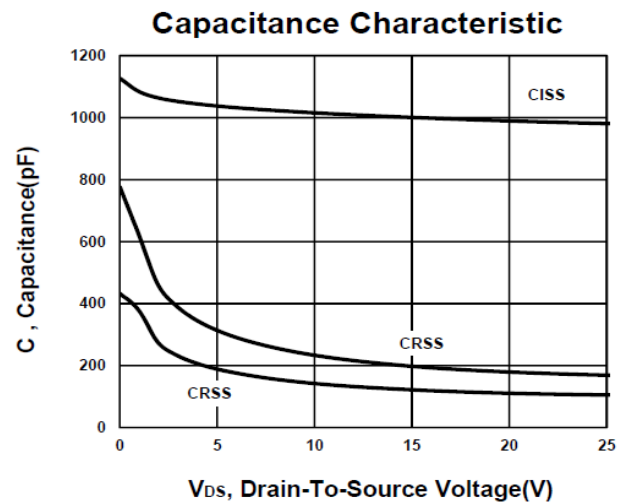
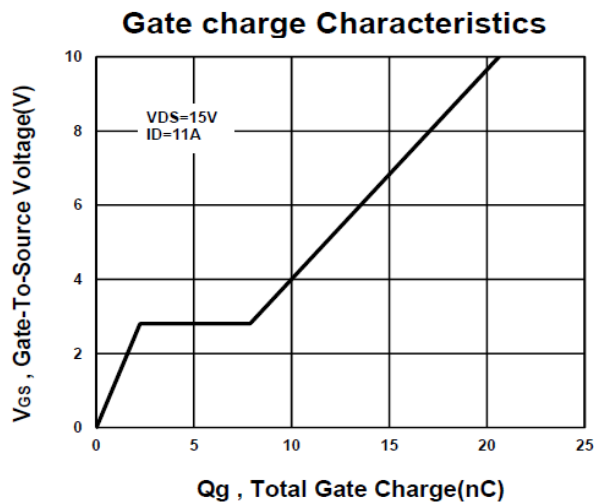
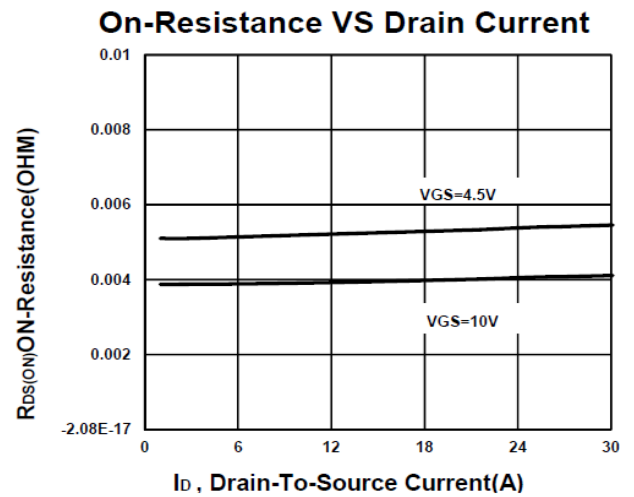
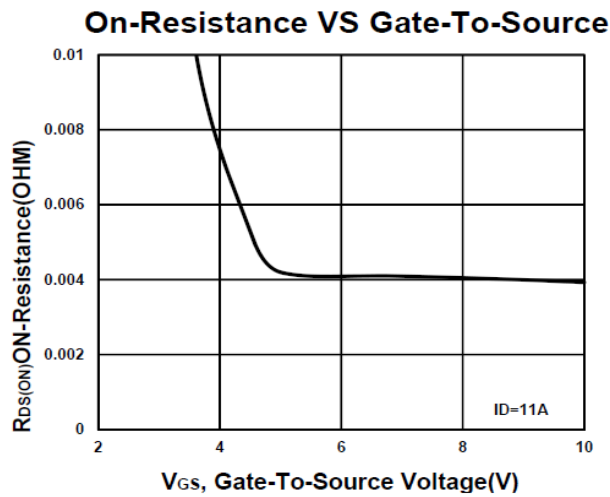
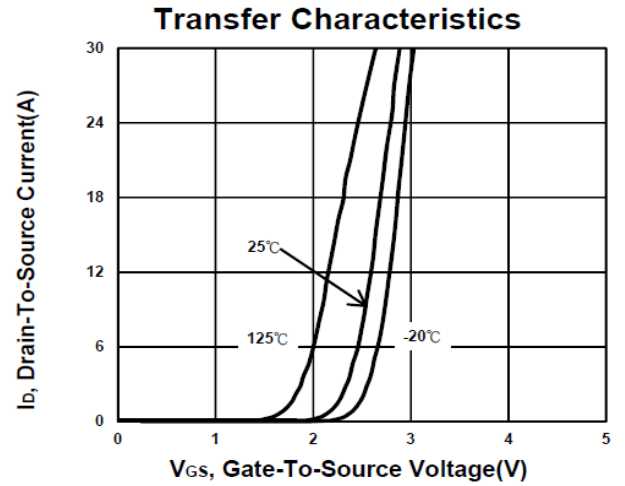
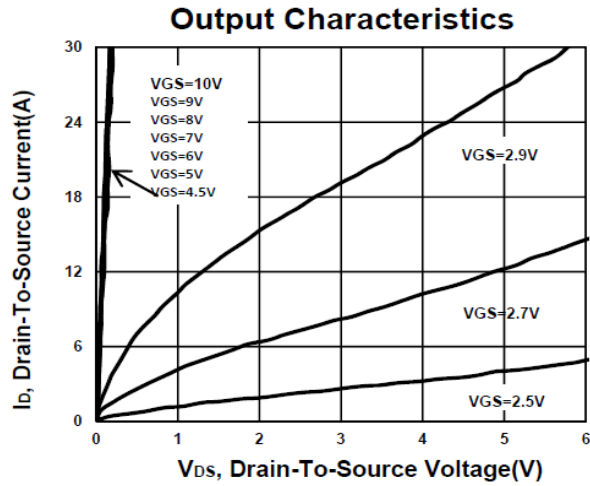


Single Pulse Maximum Power Dissipation

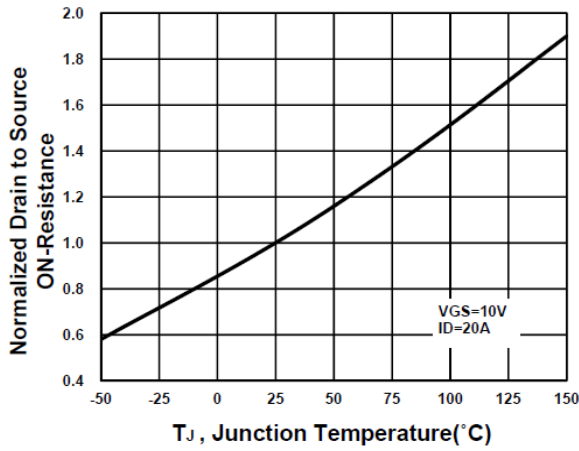


Transient Thermal Response Curve

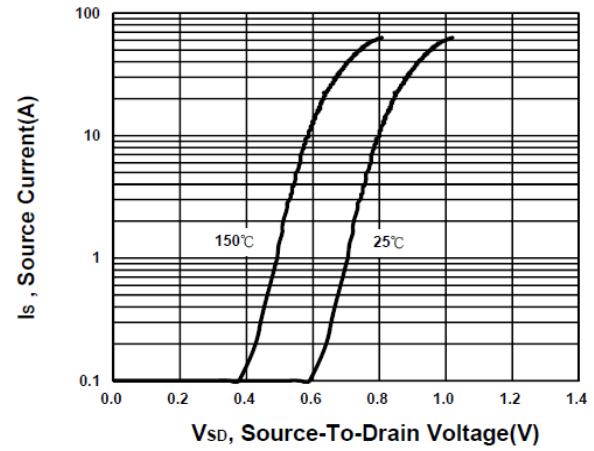




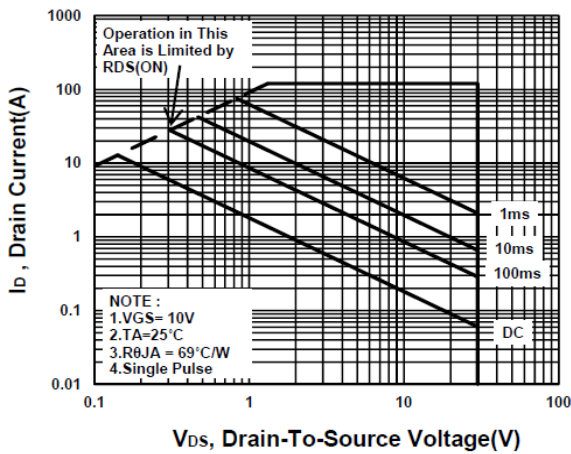
On-Resistance VS Temperature



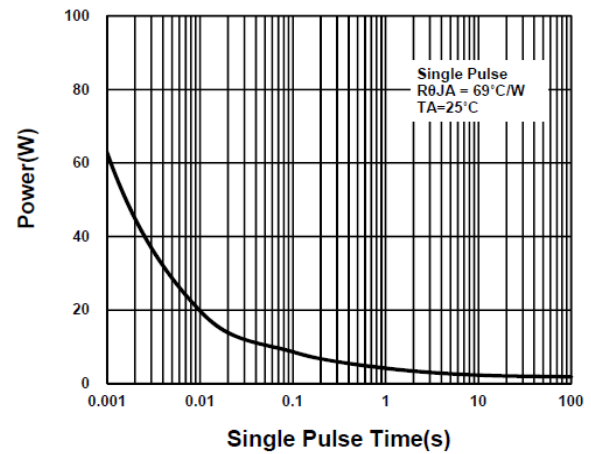
Source-Drain Diode Forward Voltage



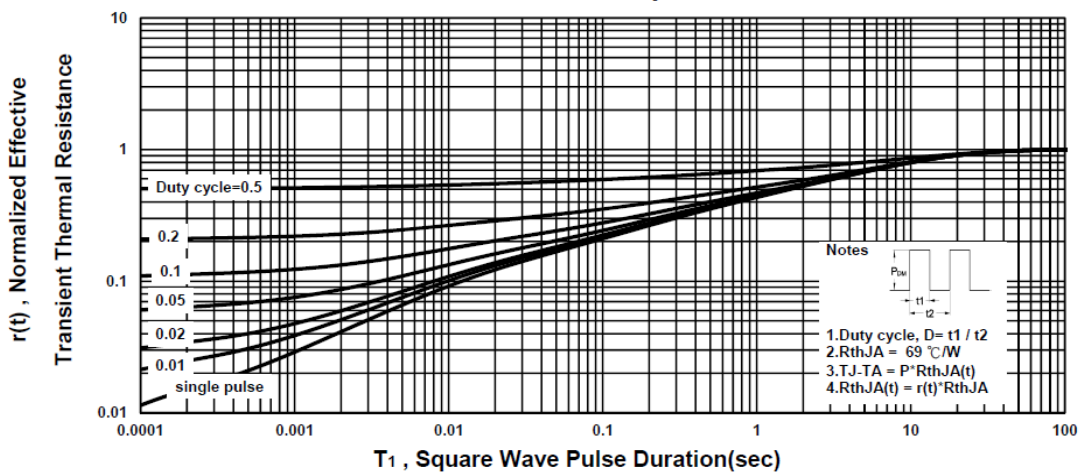
Safe Operating Area



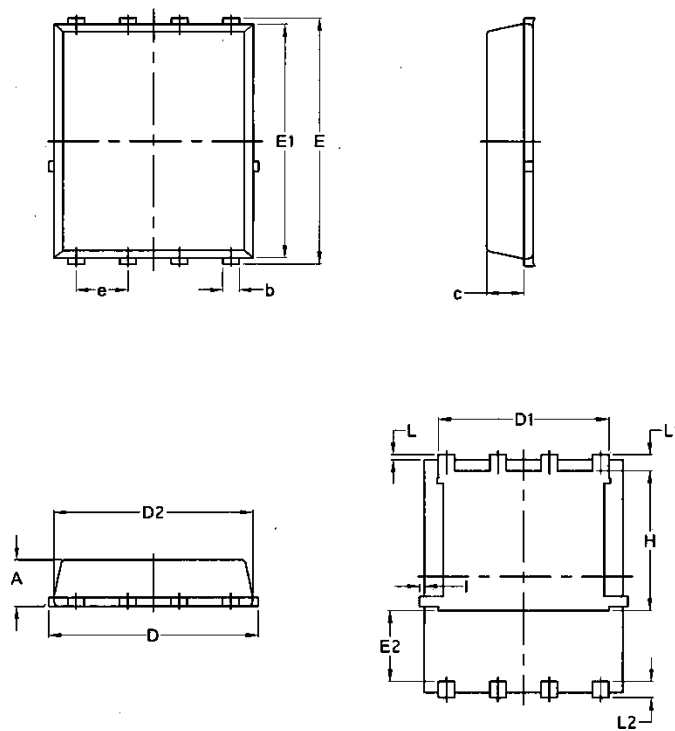
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070