

■ PRODUCT CHARACTERISTICS

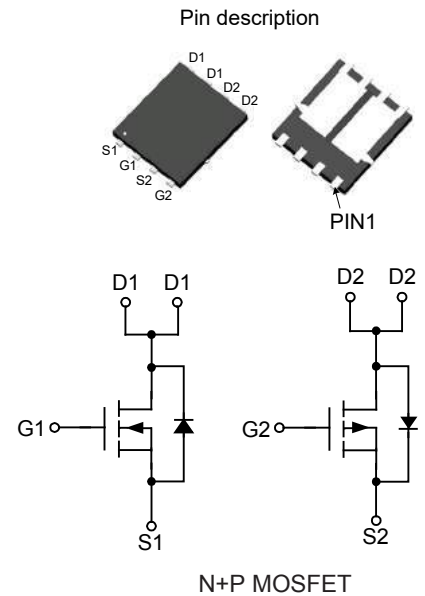
N-Channel	P-Channel
$BV_{DSS} = 30V$	$BV_{DSS} = -30V$
$R_{DS(on)} (@VGS = 10V) < 9m\Omega$	$R_{DS(on)} (@VGS = -10V) < 25m\Omega$
$R_{DS(on)} (@VGS = 4.5V) < 13m\Omega$	$R_{DS(on)} (@VGS = -4.5V) < 35m\Omega$

■ FEATURES

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

■ APPLICATIONS

- SMPS and general purpose applications
- Hard switchen and high frequency circuits
- Uninterruptible power supply



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-free	Halogen		
N/A	MOT3628J	PDFN3X3	5000 pieces /Reel

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	N-channel	P-channel	Unit	
Drain-Source Voltage	V_{DS}	30	-30	V	
Gate-Source Voltage	V_{GS}	± 20	± 20	V	
Continuous Drain Current	I_D	$T_C = 25^\circ C$	25	-19	A
		$T_C = 100^\circ C$	17.7	-13.4	A
Pulsed Drain Current	I_{DM}	90	-60	A	
Maximum Power Dissipation	P_D	21		W	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175		$^\circ C$	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7		$^\circ C/W$	

■ N-ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	2.0	3.0	V
Drain-Source On-State Resistance	$r_{DS(ON)}$	$V_{GS}=10V, I_D=7A$	-	9.0	13	$m\Omega$
		$V_{GS}=4.5V, I_D=6A$	-	13	19	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=7A$	-	29	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$	-	450	-	pF
Output Capacitance	C_{oss}		-	150	-	pF
Reverse Transfer Capacitance	C_{rss}		-	90	-	pF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, R_L=2.5\Omega$ $V_{GS}=10V, R_G=3\Omega$	-	5	-	nS
Turn-on Rise Time	t_r		-	12	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	nS
Turn-Off Fall Time	t_f		-	6	-	nS
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=6A,$ $V_{GS}=10V$	-	9.5	-	nC
Gate-Source Charge	Q_{gs}		-	2.0	-	nC
Gate-Drain Charge	Q_{gd}		-	1.9	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=25A$	-	-	1.2	V
Diode Forward Current	I_S		-	-	25	A

■ P-ELECTRICAL CHARACTERISTICS (T_c=25°C unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-	-2.5	V
Drain-Source On-State Resistance						
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-6A	-	25	28	mΩ
		V _{GS} =-4.5V, I _D =-5A	-	35	42	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-6A	10	-	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, F=1.0MHz	-	920	-	pF
Output Capacitance	C _{oss}		-	140	-	pF
Reverse Transfer Capacitance	C _{rss}		-	90	-	pF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, R _L =2.5Ω V _{GS} =-10V, R _G =3Ω	-	8	-	nS
Turn-on Rise Time	t _r		-	30	-	nS
Turn-Off Delay Time	t _{d(off)}		-	22	-	nS
Turn-Off Fall Time	t _f		-	26	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-6A, V _{GS} =-10V	-	16.2	-	nC
Gate-Source Charge	Q _{gs}		-	2.9	-	nC
Gate-Drain Charge	Q _{gd}		-	3.6	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-6A	-	-	-1.2	V
Diode Forward Current	I _S		-	-	-19	A

■ N-TYPICAL CHATACTERISTICS

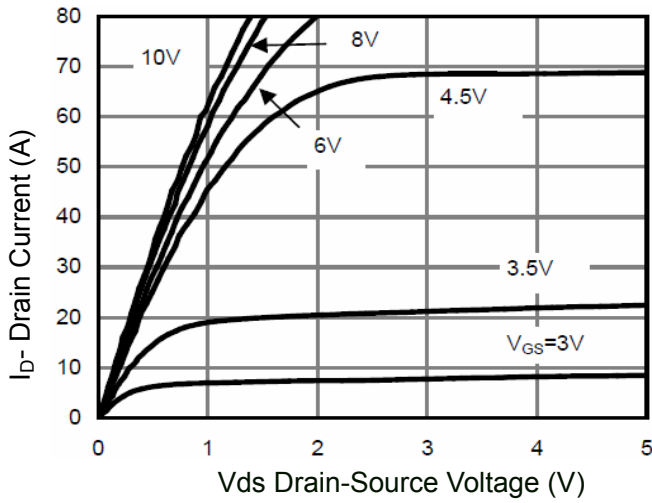


Figure 1 output characteristics

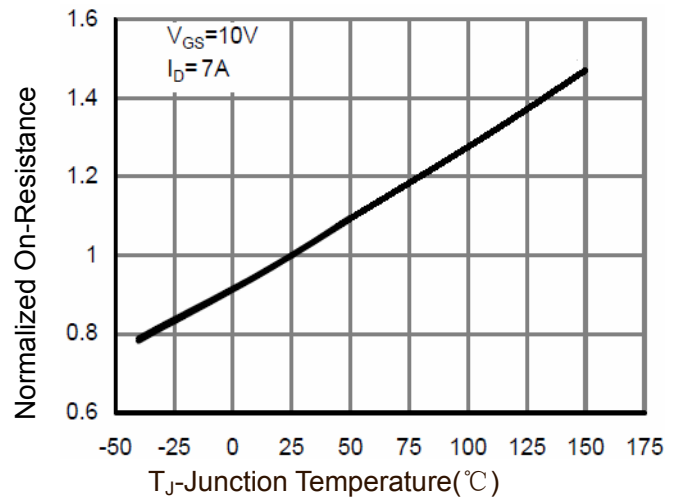


Figure 2 rdson-junction temperature

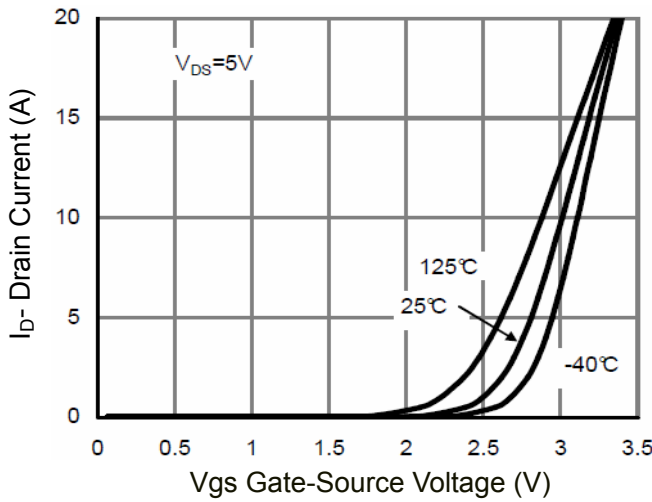


Figure 3 transfer characteristics

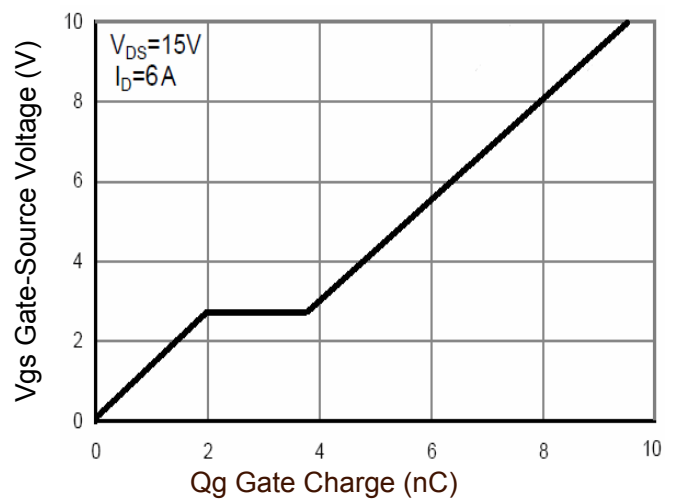


Figure 4 gate charge

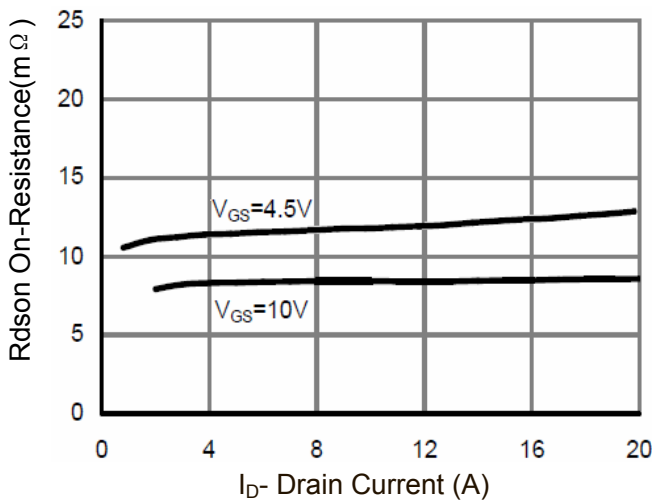


Figure 5 rdson drain current

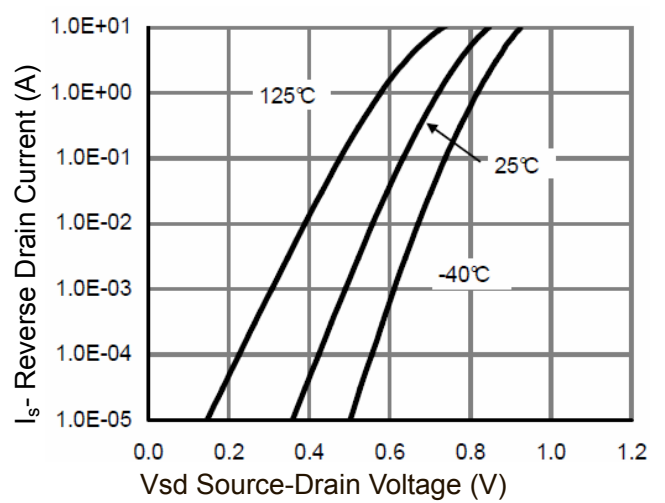


Figure 6 source-drain diode forward

■ N-TYPICAL CHARACTERISTICS(Cont.)

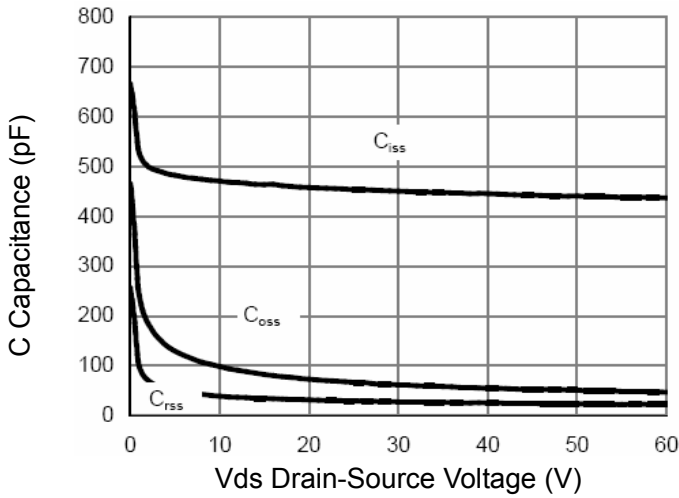


Figure 7 capacitance vs vds

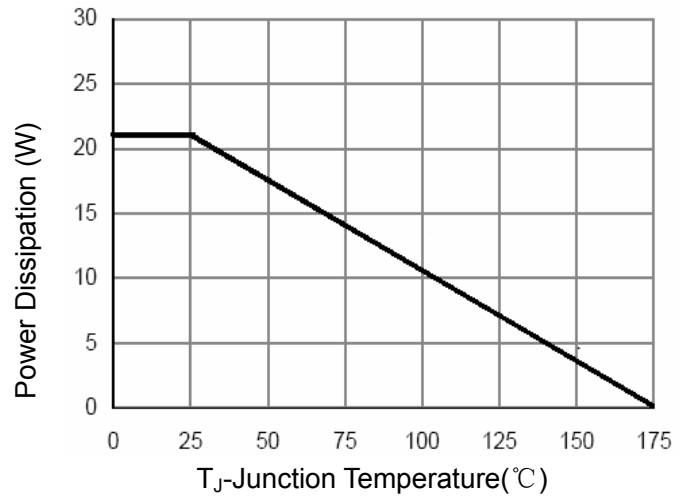


Figure 8 power de-rating

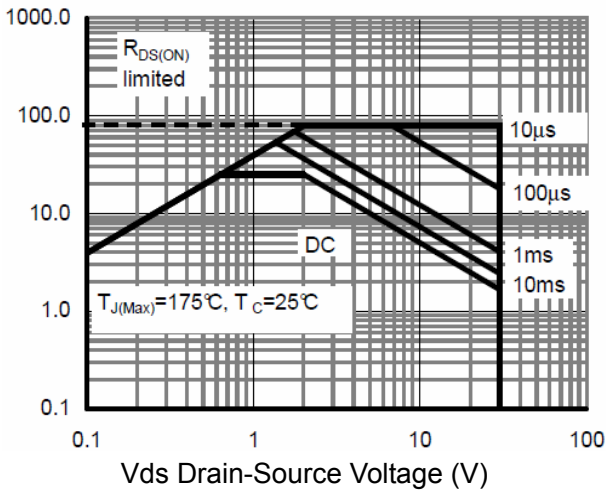


Figure 9 safe operation area

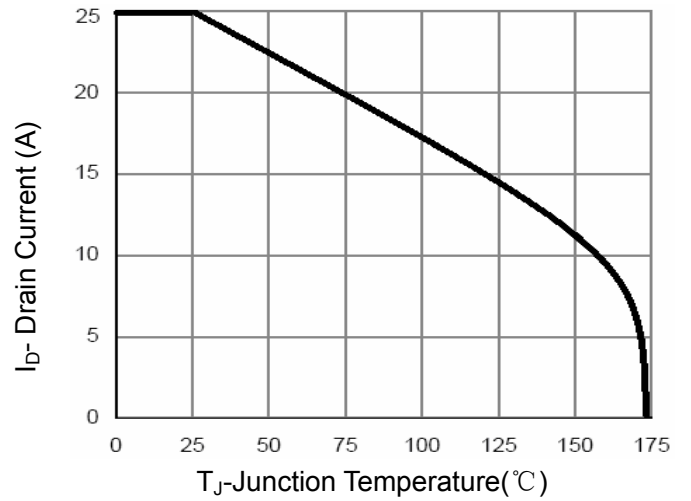


Figure 10 current de-rating

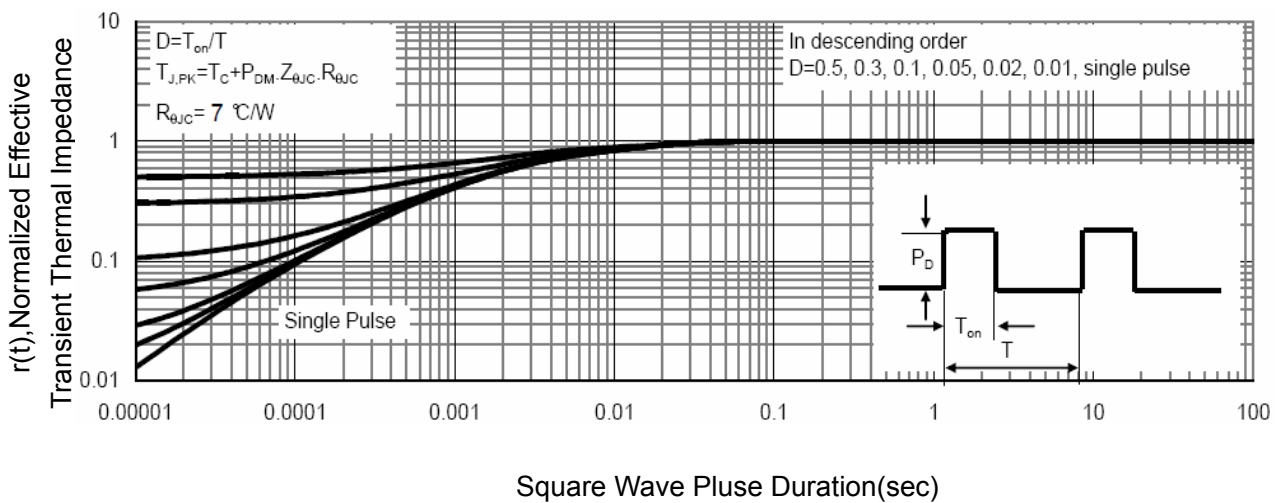


Figure 11 normalized maximum transient thermal impedance

■ P-TYPICAL CHATACTERISTICS

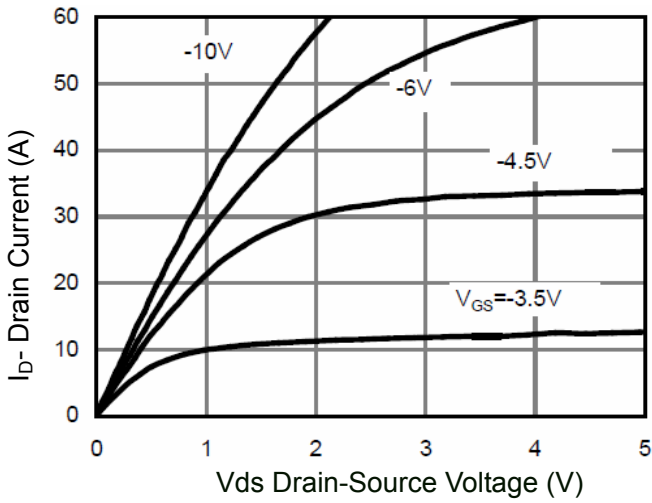


Figure 1 output characteristics

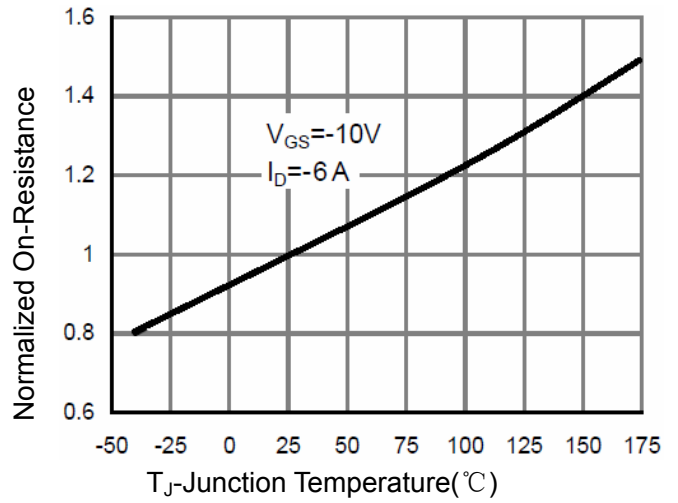


Figure 2 $r_{DS(on)}$ -junction temperature

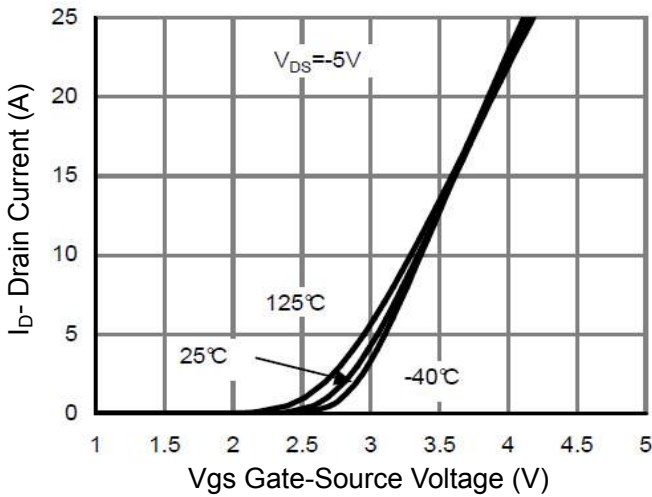


Figure 3 transfer characteristics

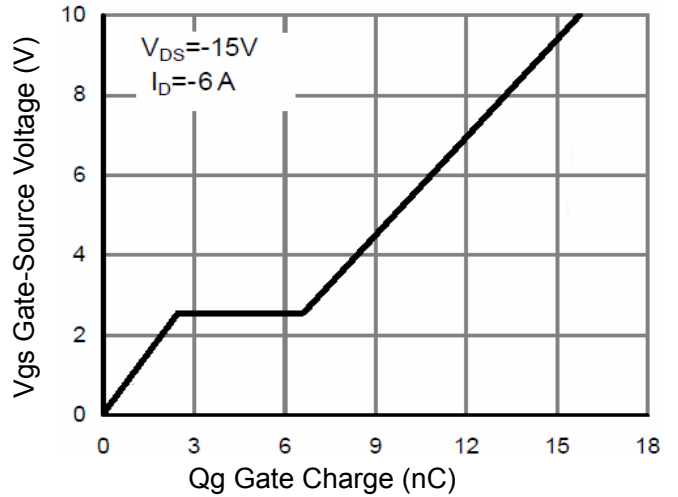


Figure 4 gate charge

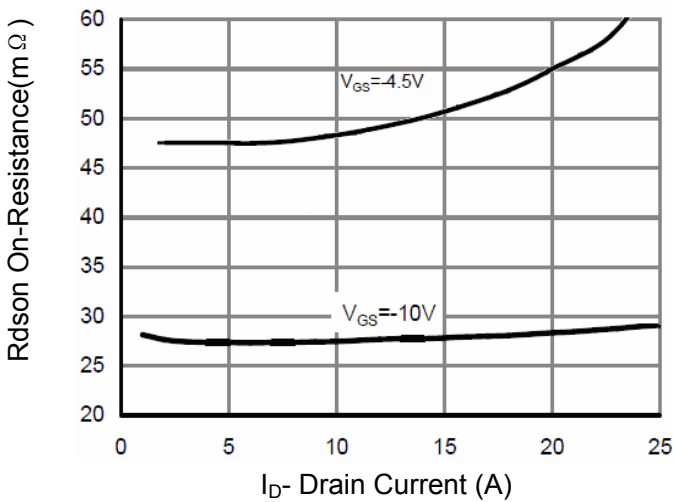


Figure 5 $r_{DS(on)}$ drain current

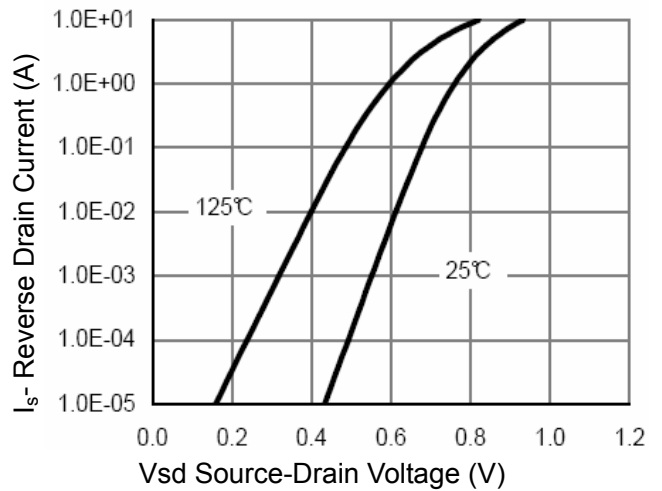


Figure 6 source-drain diode forward

■ P-TYPICAL CHATACTERISTICS(Cont,)

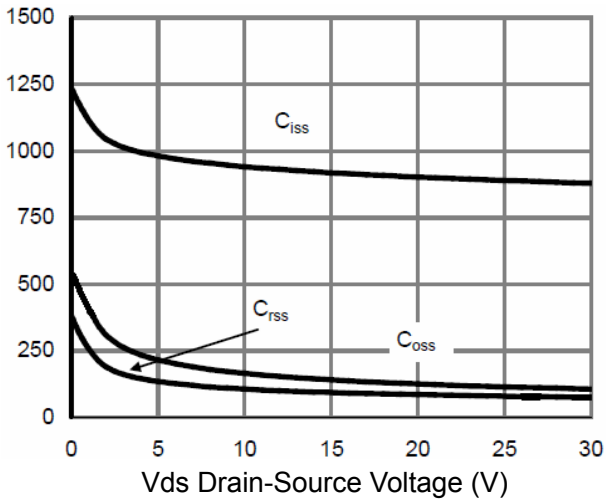


Figure 7 capacitance vs vds

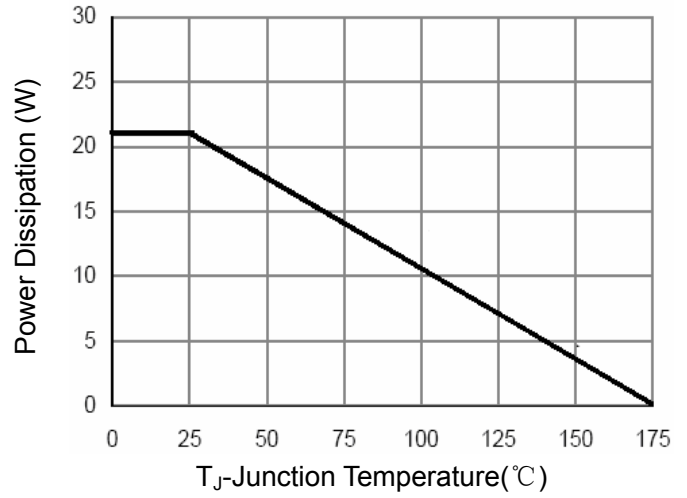


Figure 8 power de-rating

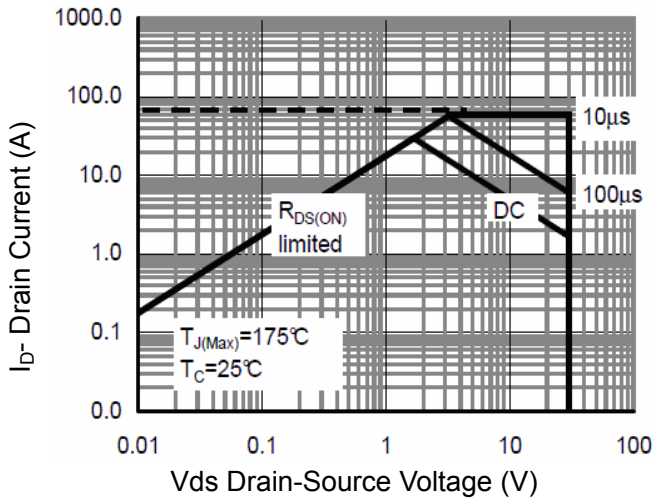


Figure 9 safe operation area

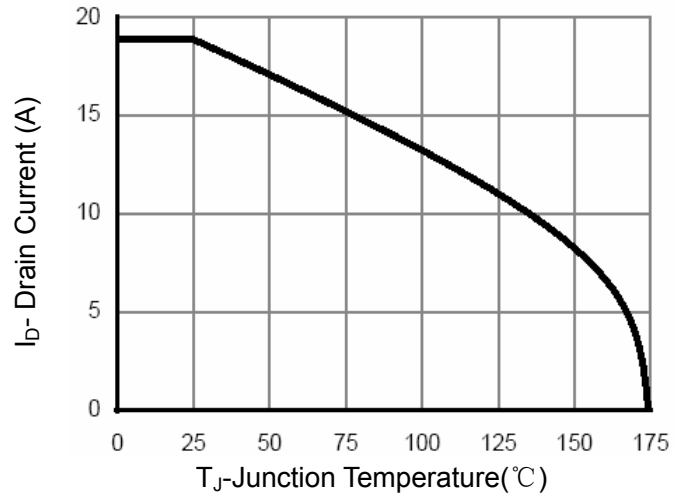


Figure 10 current de-rating

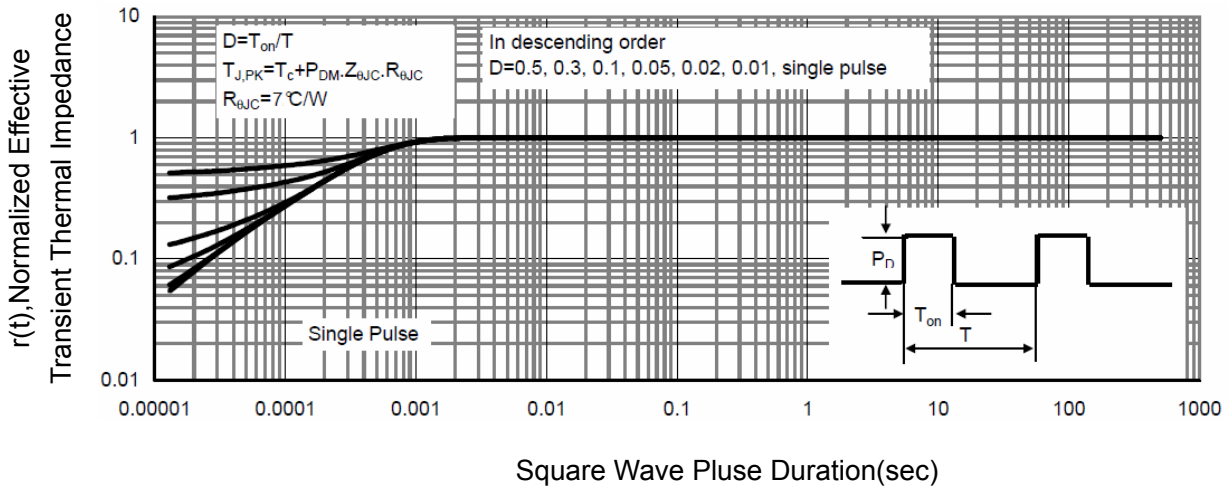
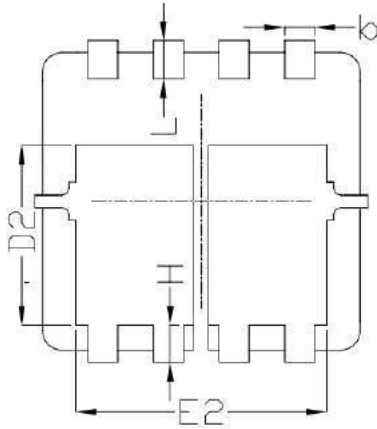
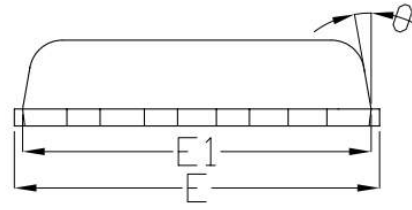
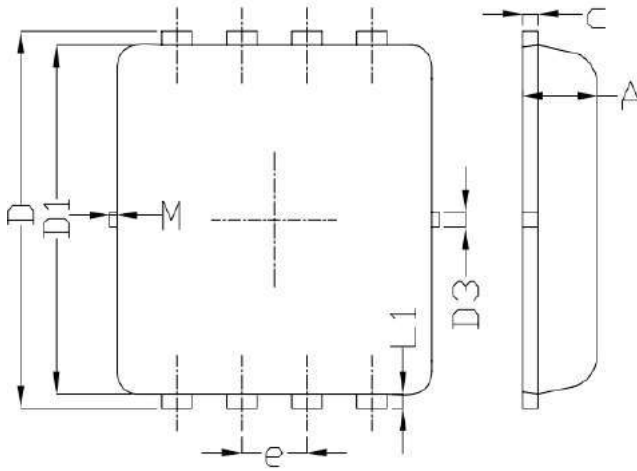


Figure 11 normalized maximum transient thermal impedance

■ PDFN3X3-8L PACKAGE MECHANICAL DATA



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	---	0.13	---
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	---	0.13	---
θ	---	10°	12°
M	*	*	0.15
* Not specified			