N & P-Channel 80-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (mΩ)	I_D (A)
80	740 @ V_{GS} = 10V	0.52
	810 @ V_{GS} = 4.5V	0.50
-80	3300 @ V_{GS} = -10V	-0.25
	3400 @ V_{GS} = -4.5V	-0.24

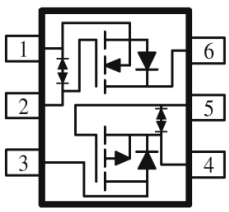
Key Features:
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

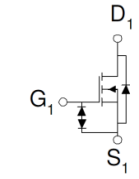
Typical Applications:
- LED Inverter Circuits
- DC/DC Conversion Circuits
- Motor drives

RoHS COMPLIANT
HALOGEN FREE

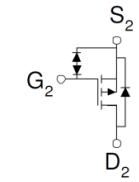
ESD Protected

SC70-6





N-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		**Symbol**	**Nch Limit**	**Pch Limit**	**Units**
Drain-Source Voltage		V_{DS}	80	-80	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current [a]	T_A=25°C	I_D	0.52	-0.25	A
	T_A=70°C		0.43	-0.21	
Pulsed Drain Current [b]		I_{DM}	2	-2	
Continuous Source Current (Diode Conduction) [a]		I_S	0.4	-0.4	A
Power Dissipation [a]	T_A=25°C	P_D	0.3	0.3	W
	T_A=70°C		0.21	0.21	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

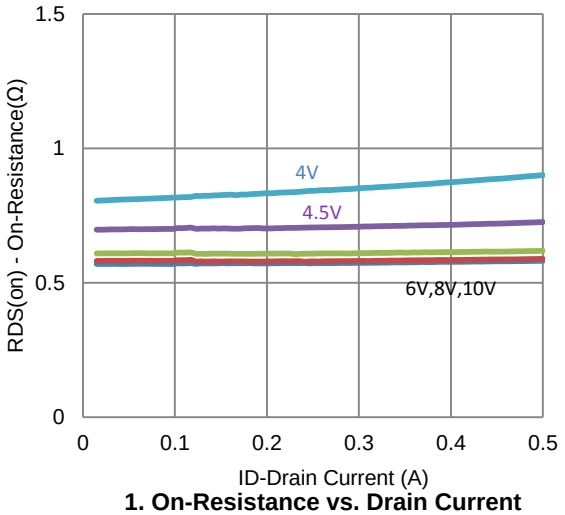
THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient [a]	t <= 10 sec	$R_{\theta JA}$	415	°C/W
	Steady State		460	

Notes
a. Surface Mounted on 1” x 1” FR4 Board.
b. Pulse width limited by maximum junction temperature

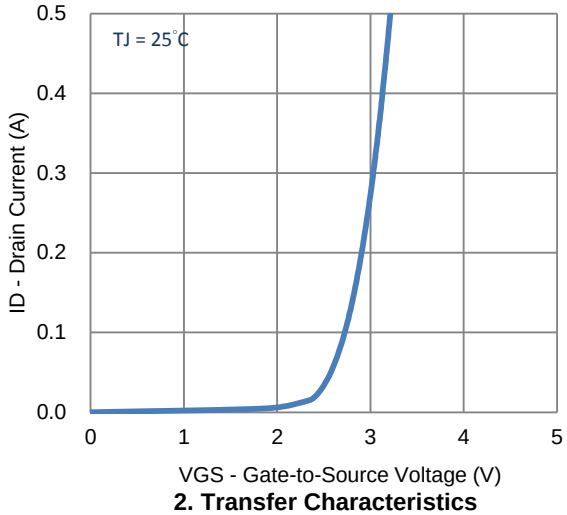
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA **(N-ch)**	1			V
		V_{DS} = V_{GS}, I_D = -250 uA **(P-ch)**	-1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 64 V, V_{GS} = 0 V **(N-ch)**			1	uA
		V_{DS} = -64 V, V_{GS} = 0 V **(P-ch)**			-1	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V **(N-ch)**	0.8			A
		V_{DS} = -5 V, V_{GS} = -10 V **(P-ch)**	-0.4			A
Drain-Source On-Resistance [a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 0.44 A **(N-ch)**			740	mΩ
		V_{GS} = 4.5 V, I_D = 0.35 A **(N-ch)**			810	
		V_{GS} = -10 V, I_D = -0.2 A **(P-ch)**			3300	mΩ
		V_{GS} = -4.5 V, I_D = -0.16 A **(P-ch)**			3400	
Forward Transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 0.44 A **(N-ch)**		9		S
		V_{DS} = -15 V, I_D = -0.2 A **(P-ch)**		7		S
Diode Forward Voltage [a]	V_{SD}	I_S = 0.2 A, V_{GS} = 0 V **(N-ch)**		0.76		V
		I_S = -0.2 A, V_{GS} = 0 V **(P-ch)**		-0.82		V
Dynamic [b]						
Total Gate Charge	Q_g	N - Channel V_{DS} = 40 V, V_{GS} = 4.5 V, I_D = 0.44 A		1.6		nC
Gate-Source Charge	Q_{gs}			0.6		
Gate-Drain Charge	Q_{gd}			1.0		
Turn-On Delay Time	$t_{d(on)}$	N - Channel V_{DS} = 40 V, R_L = 91 Ω, I_D = 0.44 A, V_{GEN} = 10 V, R_{GEN} = 6 Ω		3		ns
Rise Time	t_r			5		
Turn-Off Delay Time	$t_{d(off)}$			12		
Fall Time	t_f			4		
Input Capacitance	C_{iss}	N - Channel V_{DS} = 15 V, V_{GS} = 0 V, f = 1 Mhz		77		pF
Output Capacitance	C_{oss}			24		
Reverse Transfer Capacitance	C_{rss}			14		
Total Gate Charge	Q_g	P - Channel V_{DS} = -40 V, V_{GS} = -4.5 V, I_D = -0.2 A		2.1		nC
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.0		
Turn-On Delay Time	$t_{d(on)}$	P - Channel V_{DS} = -40 V, R_L = 200 Ω, I_D = -0.2 A, V_{GEN} = -10 V, R_{GEN} = 6 Ω		4		ns
Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			9		
Fall Time	t_f			3		
Input Capacitance	C_{iss}	P - Channel V_{DS} = -15 V, V_{GS} = 0 V, f = 1 Mhz		100		pF
Output Capacitance	C_{oss}			24		
Reverse Transfer Capacitance	C_{rss}			13		

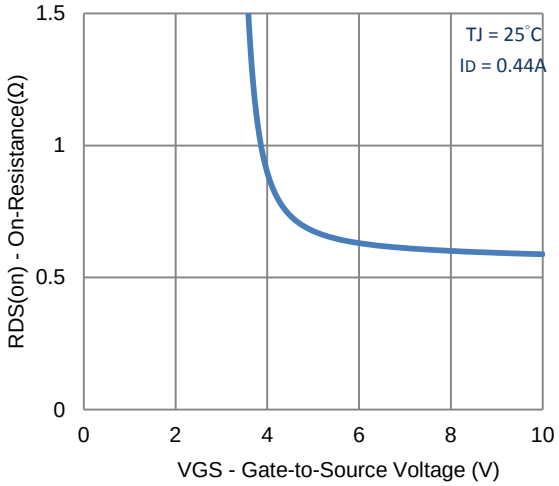
Typical Electrical Characteristics - N-channel



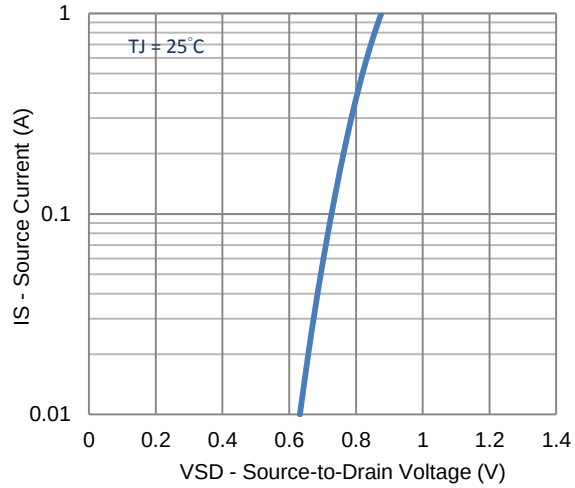
1. On-Resistance vs. Drain Current



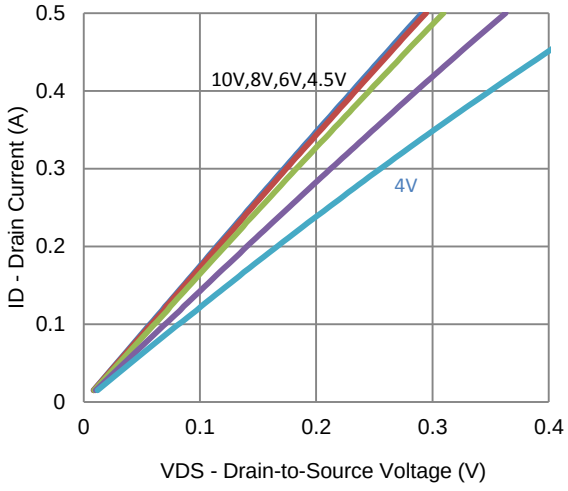
2. Transfer Characteristics



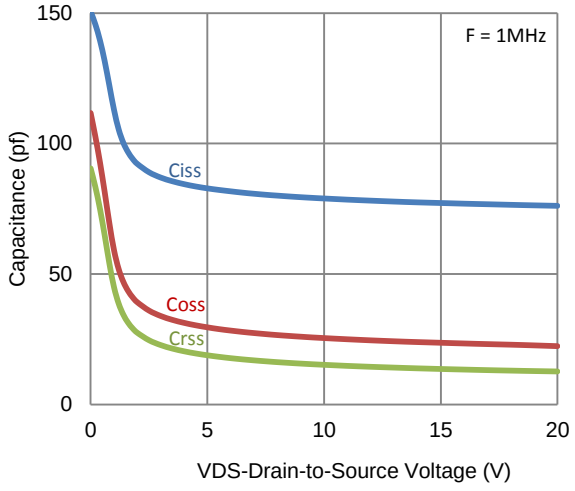
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

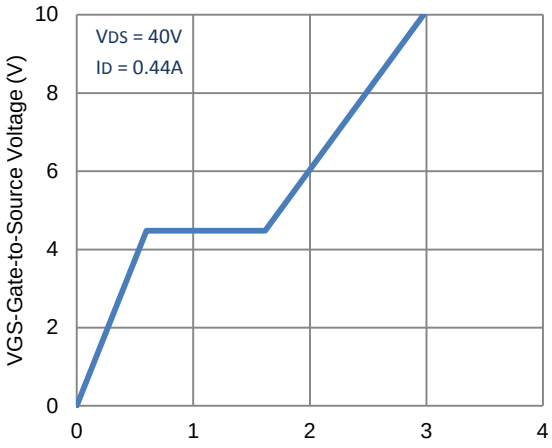


5. Output Characteristics

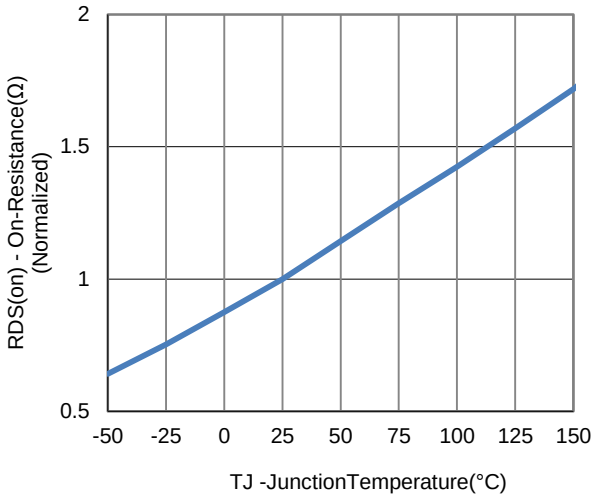


6. Capacitance

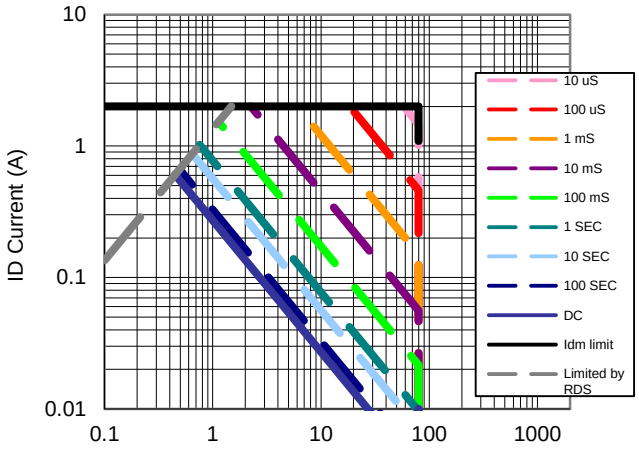
Typical Electrical Characteristics - N-channel



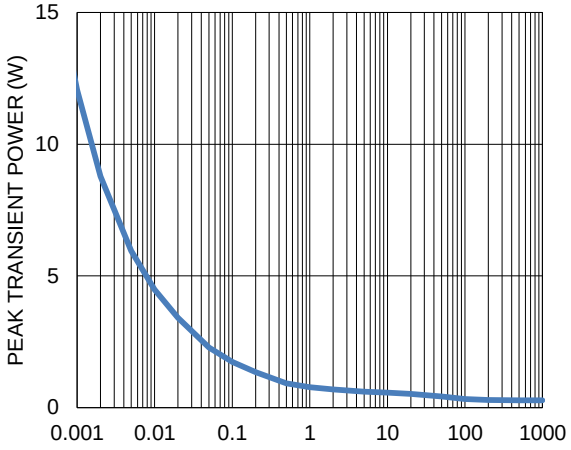
7. Gate Charge



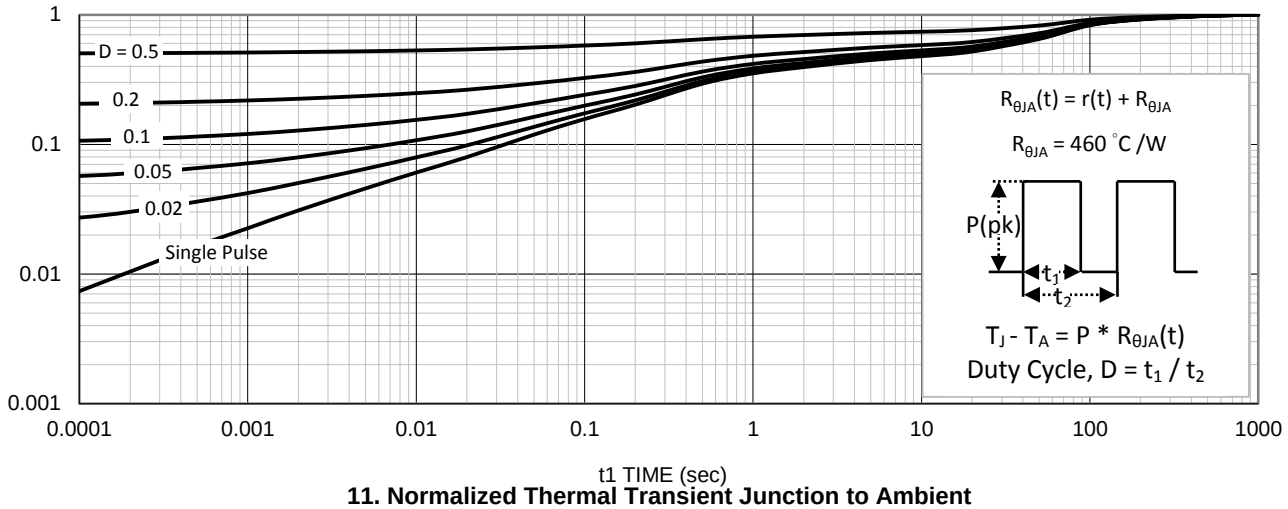
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

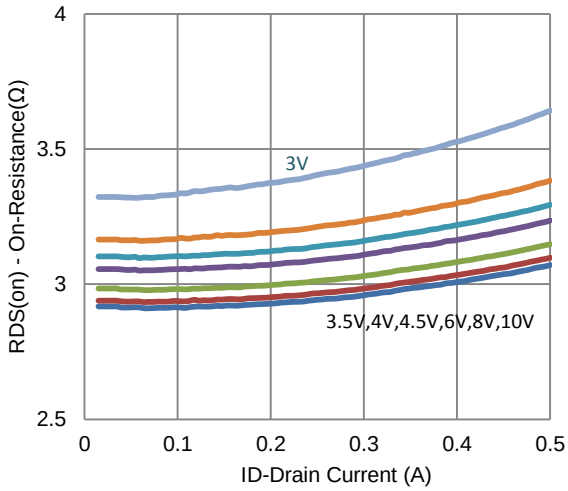


10. Single Pulse Maximum Power Dissipation

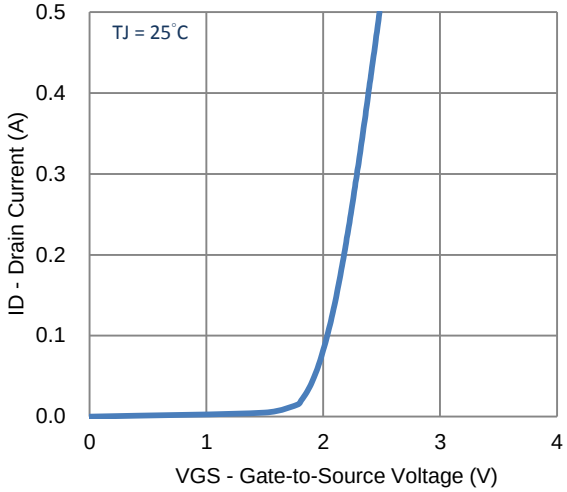


11. Normalized Thermal Transient Junction to Ambient

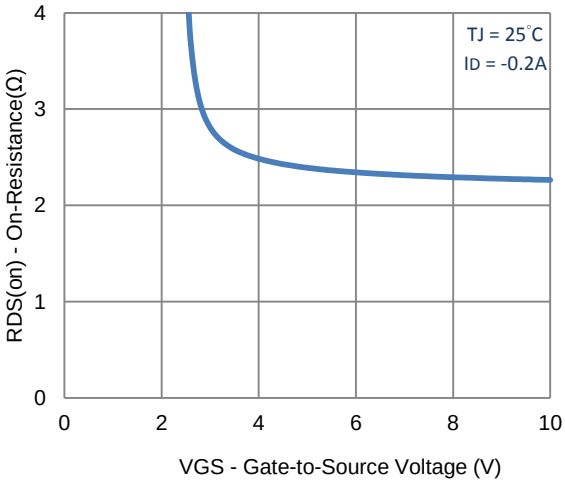
Typical Electrical Characteristics - P-channel



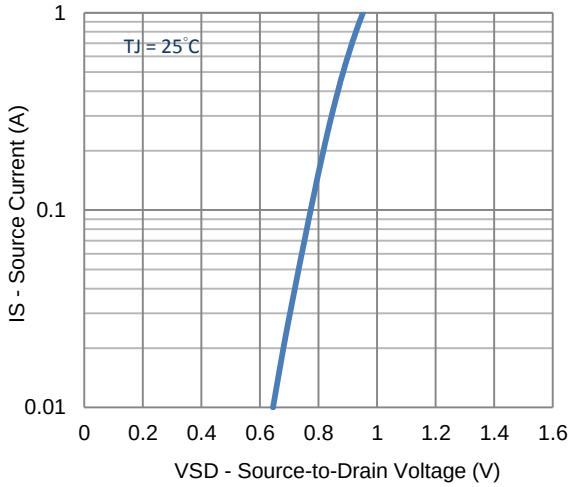
1. On-Resistance vs. Drain Current



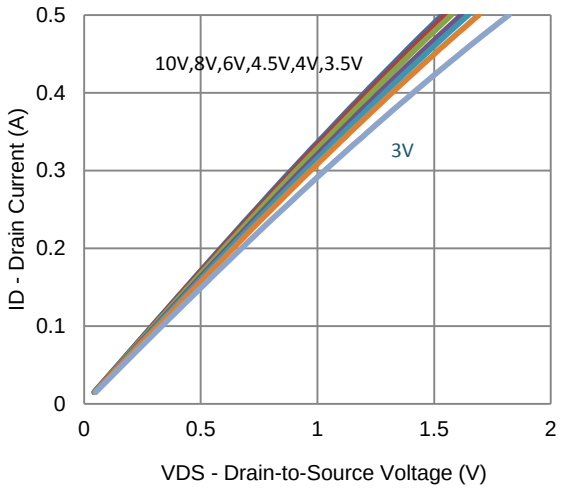
2. Transfer Characteristics



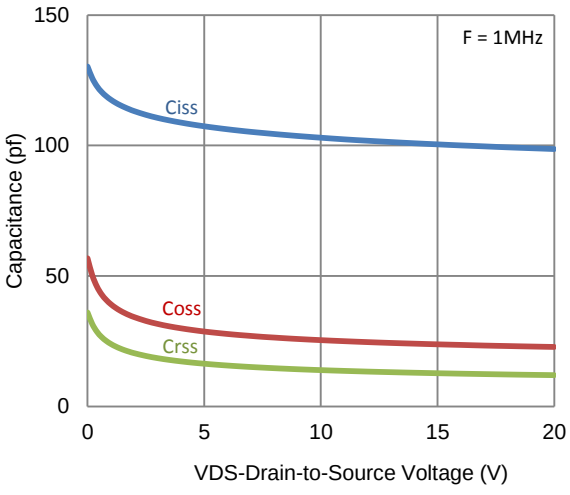
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

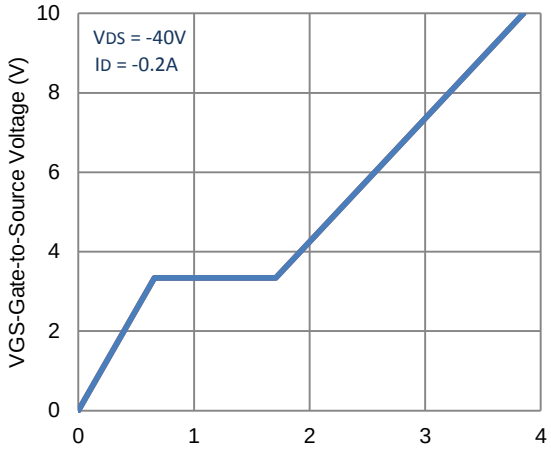


5. Output Characteristics

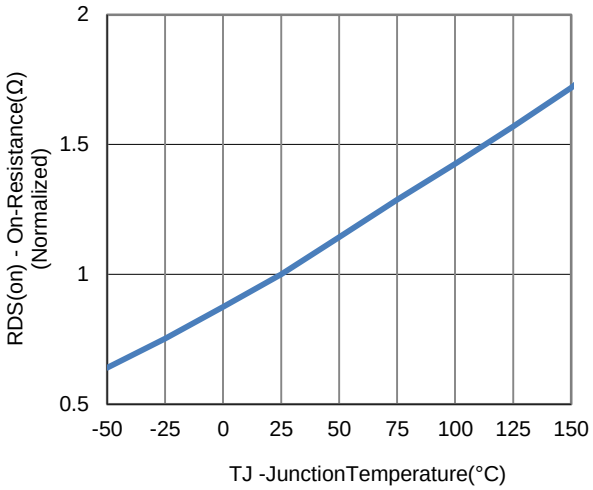


6. Capacitance

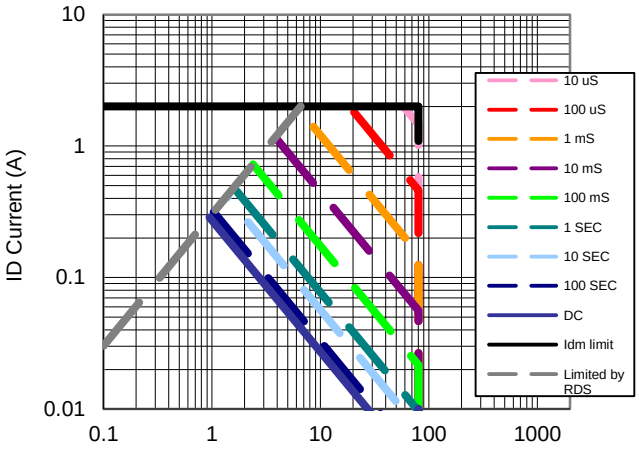
Typical Electrical Characteristics - P-channel



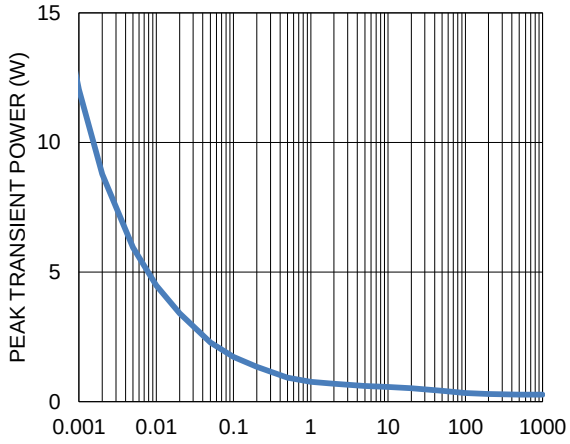
7. Gate Charge



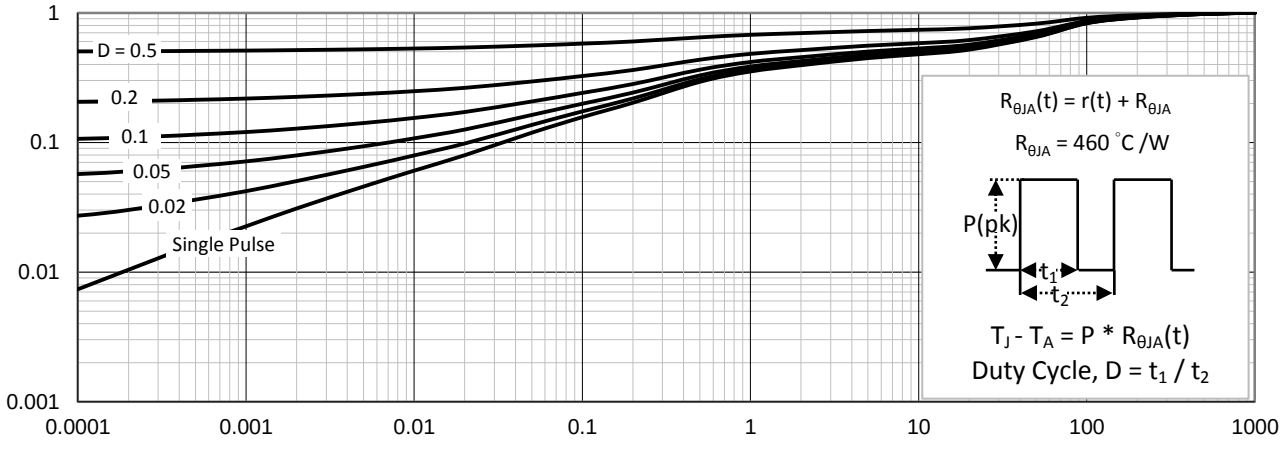
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

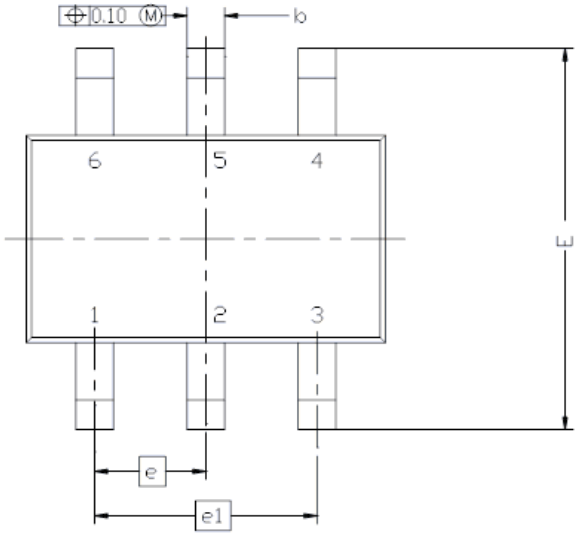


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.900	0.95	1.10	0.035	0.037	0.043
A1	0.00	---	0.10	0.000	---	0.004
A2	0.70	0.90	1.00	0.028	0.035	0.039
b	0.15	0.22	0.30	0.006	0.016	0.012
c	0.08	0.127	0.20	0.003	0.005	0.008
D	2.10 BSC			0.083 BSC		
E	2.30 BSC			0.091 BSC		
E1	1.30 BSC			0.051 BSC		
e	0.65 BSC			0.026 BSC		
e1	1.30 BSC			0.051 BSC		
L	0.26	0.40	0.46	0.010	0.015	0.018
L2	0.254BSC			0.010BSC		
R	0.10	---	---	0.004	---	---
θ	0?	4?	8?	0?	4?	8?
θ1	7?NOM			7?NOM